DOCUMENT RESUME

ED 228 976 IR 010 637

AUTHOR Threlkeld, Robert M.; And Others
TITLE Northern Network. Final Report. Program No. 13.680.
INSTITUTION University of Southern Maine, Portland. Human Services Development Inst.
SPONS AGENCY Department of Health, Education, and Welfare, Washington, D.C. Office of Telecommunications.
PUB DATE [82]
NOTE 209p.
PUB TYPE Guides - Non-Classroom Use (055) -- Reports - General (140)

EDRS PRICE MF01/PC09 Plus Postage.
DESCRIPTORS Adoption (Ideas); Attitudes; Computer Oriented Programs; Cost Effectiveness; *Human Services; *Online Systems; *Program Evaluation; Program Implementation; *Public Agencies; *Teleconferencing; User Satisfaction (Information); Use Studies; *Vocational Rehabilitation
IDENTIFIERS Computer Communication; Maine; New Hampshire

ABSTRACT

This report describes the 1980-81 development of a multistate, multimedia, multi-agency audioconferencing network for human services in Maine and New Hampshire, under a grant which was designed to: (1) establish a 20-site audioconferencing network in vocational rehabilitation offices; (2) provide training and technical assistance to the agencies in actualizing the audio network; (3) pilot test an adjunct computer conferencing network; (4) develop a plan to integrate other human services agencies into the audio network; and (5) evaluate the program. The project implementation, from initial planning until completion, is described, and the quantitative evaluation results relating to user attitudes, costs, and possible travel savings are presented. A more subjective analysis summarizes experience gained in the system operation, and some generalizations are suggested concerning the introduction of such technologies into traditional, small government agencies. Appendices include the Northern Network User Guide, computer conferencing final report and evaluation, a description of the development of an audioconferencing system for the Maine Bureau of Rehabilitation and assessment of the interaction pattern of a single regular user group, a sample teleconference transcript, evaluation materials, project samples, and the Network Operator's Manual. (LMM)

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NORTHERN NETWORK

FINAL REPORT

PROGRAM No. 13.680

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IR010637

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CHAPTER ONE

NARRATIVE

NARRATIVE

INTRODUCTION

This is the final report of a grant from the Office of Telecommunications Policy of the former Department of Health, Education and Welfare to the University of Southern Maine's Human Services Development Institute (HSDI). The grant, entitled "Northern Network," was given to create and operate a multi-state, multi-media, multi-agency audio conferencing network for human services in Maine and New Hampshire. Grant activities were held between April 1, 1980 and September 30, 1981, with a six-month extension provided at the end of that time to continue project activities.

The grant had a number of objectives, which will be described in detail in the body of this report. These objectives were:

1. To establish a 20-site audio conferencing network in Maine and New Hampshire local and central vocational rehabilitation offices;

2. To provide training and technical assistance to vocational rehabilitation agencies in New Hampshire and Maine in actualizing the audio network;

3. To pilot test a computer conferencing network to act as an adjunct to the audio system, linking the vocational rehabilitation central offices to each other and to major rehabilitation information resources;

4. To develop a plan to integrate other human service agencies into the audio network in the second operating year; and

5. To evaluate the project in terms of the type and amount of usage, user satisfaction and interstate information sharing.

The project and its activities were quite successful, and the information presented in this report will reinforce this statement. Northern Network is now operating and being used, and is rapidly being seen as a cost effective way to improve access to information.

This report is broken into three major chapters, followed by a series of appendices. In the first chapter, we will describe through narrative how the project was implemented from initial planning until its end. This section should be of substantial value to persons considering the development of a similar type of audio and computer conferencing system. In the second chapter, we will present the quantitative evaluation results gathered by the project. These relate to user attitudes, costs, and possible travel savings, and form the hard data of this report.

The third section is a more subjective analysis of the entire project, which attempts to draw together experience gained in the past few years of operating a teleconferencing system for human services, within the context of two state governments. We will suggest some tentative generalizations which we feel apply to the introduction of technologies such as this into traditional small government agencies. When read with the companion

document described below, interested persons should have a sense of the organizational forces which aid or impede technological innovation.

It is important to note that significant evaluation work was done in conjunction with this project by the Institute for the Future (IFF). Operating under a contract with HSDI, IFF performed an anthropological-type study of the New Hampshire VR agency's meeting patterns, both before and after they had access to the audio teleconferencing system. We were fortunate to have access to the considerable talents of IFF staff both in their formal subcontract study, and in the informal advice and counsel given to us along the way.

A project such as this one succeeds because of a collective effort by many partners. We would simply like to mention a few. Owen Pollard, Director of the Maine Bureau of Rehabilitation, took the initial step by being the first agency of its type to invest in an untried technology; and through his leap of faith, there is a successful teleconferencing system in Maine and New Hampshire today. Without the active advocacy and support of Lita Colligan and later, Ann Erdman, from the Office of Telecommunications Policy, Northern Network would never have come into being. We also thank the New Hampshire VR agency for its active partnership in this endeavor, at a time when the organization was ungergoing

severe strains from the fiscal contractions of the State government. The New Hampshire VR agency proved to be an active and creative user of the system from the beginning. We would also like to acknowledge the VR staffs in both states, and particularly the secretaries who carried the responsibility of being our contact persons throughout the project period. Without this latter group, the project would not have gone as smoothly as it did.

Finally, we would like to express thanks to the Institute for the Future: Bob Johansen, Kathy Vian, and Jeff Charles. In particular, however, we want to recognize IFF's Mike Nyhan, whose recent death meant the loss of a very decent person as well as a highly competent professional.

DEVELOPMENT OF THE SYSTEM

"The only fault I find with New Hampshire," wrote Robert Frost, "is that her mountains aren't high enough." While northern New England's terrain suffers by comparison with the Rockies, the rugged landscape and severe climate make the region breathtaking and beautiful to the casual visitor, but strenuous and trying to residents. Around Labor Day, when the tourists leave the beaches and woodlands, the harsh realities of living here come to the fore. As the leaves fall and the air turns sharp, economic and demographic figures speak clearly to the region's inhabitants.

Northern New England is poor. All three states, Maine, New Hampshire and Vermont, are below the U.S. median income level, with Maine having been recently considered the poorest state in the nation.

People are spread thinly here. While an average of 727 crowd together on a square mile in Massachusetts, only 32 people live in the same space in Maine.

The northern New England states share common economic, climatic and geographic problems, but are isolated from each other because of these same dilemmas. If people are poor, the weather unhospitable much of the year, and the terrain not conducive to roadbuilding, then it becomes extremely difficult to share information and ideas with others within the region, or from around the country.

Workers in the human services field, while frequently being seasoned professionals, often have only their own local experience to draw upon. As one sage supervisor in rural Maine noted, "twenty years experience here may only be the same year twenty times."

The Maine Bureau of Rehabilitation, responsible for the delivery of vocational rehabilitation services in the state, was well aware of the problems of service delivery in the rural northeast. Therefore, the agency entered into negotiations with HSDI in the summer of 1979 to explore the possibility of using some form of interactive telecommunications both to cut travel costs and increase information exchange. Using a time-shared dedicated telephone network with amplified audio equipment at each site, HSDI established a teleconferencing system for the Bureau of Rehabilitation in the fall of 1979. Thirteen district and central offices were wired together, and the agency experimented with audio conferencing.

During the nine-month operational period, 85 one-hour teleconferences were held. The bulk of the users were administrators holding regularly-scheduled meetings. The evaluation results showed a strong initial scepticism by agency staff toward the value of teleconferencing, but after nine months, this scepticism had vanished.

In summary, after early distrust and reluctance, the Bureau came to see teleconferencing as an important tool

in the organizational workplace. Teleconferencing became a way for persons from the far-flung offices throughout the state to communicate without having to travel.

This successful pilot test led to exploratory discussions about an expanded audio conferencing system; one which would initially link Maine and New Hampshire VR agencies, and ultimately lead to a shared audio network for the numerous human services agencies in the two states. The two VR agencies, working collaboratively with HSDI, decided to apply for federal funds for such a venture.

Planning Prior to the Grant

In November of 1979, HSDI interviewed 10% of the administrative and counseling staffs in Maine and New Hampshire in a lengthy telephone survey to ascertain their current modes of information sharing and acquisition, and the need and desire to improve forms of information exchange. The results were quite revealing. Both administrators and field staff expressed a strong desire to have greater access to persons doing similar work, service consumers, and training resources. Results of this rudimentary study are available from HSDI.

This study led HSDI to begin initial planning with the New England Telephone Company to ascertain the costs and work necessary to engineer and install a teleconferencing system.

During the several months prior to the actual submission of the grant, we had explored a variety of technical options to permit teleconferencing at the locations requested by the two state VR agencies. First, we considered the possibility of a continued relationship with the existing conferencing circuit which we had used in the pilot test. This option was rejected because the manager of this network, a system for continuing education for nurses, was not particularly enthused about a collaborative effort, particularly one which would cross state borders.

Then we looked into the potential of a "meet-me" style bridge, similar to that used by the Darome Connection in Danbury, Connecticut. When we examined the per hour costs, particularly at low levels of usage, this approach appeared prohibitively expensive.

Finally, we concluded that the most suitable system for the needs of the human services agencies would be a four-wire, dedicated system linking the offices in the two states. Each state would constitute a separate circuit, with the ability to be easily joined together into a single circuit when the need for two-state conferencing arose. Darome 611, four-wire conferencing units (called "Conveners") were chosen to be installed at each location. This was a matter of convenience as well as technical

choice. Darome equipment has "push-to-talk" microphones, which eliminates difficulties caused by ambient noise at sites. Also, the Maine VR agency had purchased their Conveners for the previous pilot test, and thus, the choice represented substantial savings to the proposed project.

Planning After the Grant Award

Subsequent to the grant award in March of 1980, new project staff moved from the hypothetical to the actual in planning the Network. Preparatory work involved both the technology and the users. During the months of April and May of 1980, we traveled throughout New Hampshire, assessing potential conferencing equipment locations and informing field staff of the coming technology and its potential implications. As we had found previously in Maine, there was some initial scepticism, but the New Hampshire field staff seemed to view the prospect of teleconferencing as a real, if somewhat unknown, opportunity to have a new and useful form of communication. Also, as we had done in Maine the year before, we asked staff to try to define their information needs, and how they imagined a teleconferencing system might help in filling them.

During these early months, we worked diligently with the New England Telephone Company to establish the wires

and circuitry necessary for the Network. In May of 1980, we anticipated that final costs of the circuit would be available by June, with an estimated installation and start-up by early September.

We also made one additional technical decision early in the project. Throughout our early pilot experience in Maine, and in later discussions with staff from both agencies, we were aware that the issue of privacy in meetings was of some importance. The Network used in the Maine pilot study was an open circuit, and permitted anyone with a Convener at any location to eavesdrop on a meeting by simply turning on the equipment. Presence of an uninvited listener was undetectable.

Because of this concern, we opted to install a special selective signaling device produced by Western Electric, known as the "SS-4." This device allowed us at circuit headquarters to dial in only those locations which were to be involved in a particular conference. Other locations were unable to hear anything but a gentle hum. At the time of this decision, the Iowa Department of Health and Welfare was using similar equipment in a 40 site network, and the SS-4 was also being used by the Georgia Hospital Association. The choice of including the SS-4 was costly, adding some 40% to the monthly telephone bill, but was deemed to be essential.

The computer conferencing pilot test, a special element of the project, was contracted out to a consultant, Dr. Valarie Lamont, a specialist in using the Electronic Information Exchange System (EIES). Dr. Lamont's final report is included in the appendices, and therefore, no further mention will be made of it in the body of this report.

Also, HSDI had the good fortune to join forces with the Institute for the Future (IFF) in the evaluation effort of this project. HSDI subcontracted with IFF a particularly interesting study of the impact of teleconferencing on a human service agency. Throughout the summer months of 1980, by letter, teleconference and in-person meetings, HSDI and IFF designed a study which involved a "snapshot" of interaction and meeting patterns of the New Hampshire VR agency prior to and one year after the installation of the audio conferencing system. IFF has produced results of this study and published them independently, and therefore, interested parties should contact the Institute for the Future, 2740 Sand Hill Road, Menlo Park, California for information related to this study.

As per our proposal, we ourselves did a significant amount of evaluation research on the usage and costs of the system. We tracked travel savings, reactions of participants to meetings, attitudinal changes, and total

usage. This evaluation material will be discussed in detail in the following chapter.

The Summer of 1980

During the summer months of 1980, we continued to work with both the Telephone Company and the agencies to prepare for the teleconferencing system. We made a second round of visits to all field offices in both Maine and New Hampshire, this time explaining in detail about the system, what it could and could not do, and how it might be helpful to them. We viewed the introduction of this new technology as a significant cultural change, particularly for the New Hampshire VR agency, and we wanted to minimize the "culture shock" associated with it.

It was during this summer period that we began to make contact with other human service organizations in both Maine and New Hampshire, explaining the potentials for the technology, usage procedures, and cost-sharing arrangements. The most common reaction, one which we now believe is typical, was interested curiosity. Whenever possible, equipment was located in sites easily accessible to non-VR agency users.

During this period, we became aware of the difficulties of working with the Bell System. While no particular individual can be faulted, the reality became evident that the Bell System is indeed huge, disjointed and uncoordinated.

The first warning we had of this was when we realized that the SS-4 privacy apparatus was not a stock item, but manufactured on demand by Western Electric in Ohio. Toward the end of the summer, we discovered that sites were not being installed in time for the early September starting date.

We had planned on a Network test in late August and when this did not occur, we began to worry about project schedules. To quote our own progress report during that period:

> Delays have been typically attributed to equipment damage, lack of the specific kind required, or from inconsistent installation... difficulty after difficulty was encountered in the installation, followed each time by a promise that the system would by up and running "four days from now." So, nearly two months have passed since the projected date of operations...

During this period, and into the fall, we continued to assist the VR organizations in getting ready for teleconferencing. Each agency designated an in-house resource person to work with the project staff, and in both cases these were the agency training officers. Northern Network's Operations Coordinator, Pamela Pease, worked with these liaison persons to design a meeting scheduling and agenda structure. She and the Network Coordinator, Linda MacNair, trained persons at each site to be responsible to hand out materials, notify teleconference participants, and maintain equipment. These persons, designated as contact persons, were secretarial

staff, and became a critical link between the Network headquarters at HSDI and the field offices.

One of the major products developed by the project during this period was the User Guide. Produced both from previous literature and staff experience, this handbook was designed to be a resource guide to every user in planning, participating in, and leading a teleconference. A copy of this document is attached as one of the appendices. The Guide is now frequently requested by other organizations interested in teleconferencing.

System Operation

Finally, after the numerous painful delays which were described earlier, the Network became totally operational on December 1, 1980 for both states. The project staff then designed and held a series of "new user training sessions" during the early winter. These sessions were for all VR agency personnel, and were held over the Network. Participants used the equipment for the first time and were impressed at the ability to hold electronic meetings.

With the system up and working, VR staff from each agency began to set up and hold their own meetings, which seemed to replicate the types of sessions which had heretofore been held face-to-face. HSDI prodded both agencies to broaden their horizons and develop new forms

of meetings, using the special assets available from teleconferencing, but there was an initial conservative flavor to using the technology.

HSDI was responsible for developing the monthly meeting schedule, establishing the electronic connections for all the teleconferences, monitoring the technical performance of the system, and maintaining all equipment. Both agencies saw HSDI as the "Mother Ship" which, in retrospect, may have later caused the project difficulties.

Because of the pilot test experience, the Maine VR agency already was aware of the importance of preplanning meetings, developing agendas, and mailing out written materials well in advance of the meetings. Therefore, the Operations Coordinator spent the bulk of her energy and attention on the New Hampshire agency. During this operational period, the Coordinator went on part-time status to attend the Alternate Media Center at New York University, so she shuttled between New York and northern New England.

In the early phases of their usage, meeting leaders were given a format for producing an agenda (see sample in the appendix), and helped in putting together the meeting. Immediately, new users discovered that they had, in fact, rarely planned meetings within a tight agenda structure. This discipline spilled over into other activities, and as one administrator put it, "I'm more

organized for face-to-face meetings now because of the teleconferencing system!"

Once completed, meeting leaders would mail their agendas to HSDI, along with a list of participants at the various locations. HSDI would reproduce these items, plus other handouts, and then mail the packets to the contact person at each participating site. The contact person would remind participants of the upcoming teleconference, and distribute materials prior to the session.

In addition to the agenda development, HSDI's Network Coordinator also kept a master schedule of time available on the system. Monthly, she would mail this form to employees in each agency, so that they had an overview of teleconferences during the upcoming four weeks.

This structuring process, and the linkage between the HSDI circuit center and the site contacts, were essential to the successful use of the system by participants. Agency staffers came to depend on the receipt of agendas, schedules and materials; and were dismayed whenever the process was disrupted.

Types of Usage Styles

Since the teleconferencing sites were in VR offices, the bulk of the usage was by VR staff in both states. The predominant regular teleconferences were between central office administrators and their field supervisors. Both Maine and New Hampshire established routine sessions

at consistent intervals for these groups. In New Hampshire, all casework supervisors held a teleconference at 9:00am each Friday, those from the Northeast region met again at 11:00am, and the Southwest region met at 1:00pm. The main central office participants were administrators for these two areas, plus other staff personnel who were needed to discuss a particular agenda item.

In Maine, regional and central administrators met in a similar way, although without the same consistency as New Hampshire. For a period of time, the manager for field operations in Augusta held weekly meetings with his five area supervisors, then these sessions dwindled to twice a month or occasionally less. We had the chance to see two different styles of information exchange by two different organizations, and these styles were typified by the scheduling differences. An interesting analysis of style of format of the Maine meetings is included as Appendix C.

Maine developed one different form of meeting from the New Hampshire agency. Every month, the Director of the agency would hold what was called an "informational meeting" in which he described policy changes, happenings at the federal level, and reasons for controversial decisions. These meetings were for the entire agency staff, and were usually attended by some 85% of all agency workers. A sample typescript of one of these meetings is included as Appendix D.

Both states also held a significant number of sporadic teleconferences for a variety of purposes. As each agency modified a policy, or had significant new information for field workers, a teleconference would be scheduled to discuss the information. Thus, a number of teleconferences dealt with services provided by other agencies, new regulations from the federal government which would have an impact on services to clients, and budgetary changes.

Use of Northern Network for Training

Teleconferencing is an ideal medium for the delivery of education and training to learners who are scattered throughout a large area. Therefore, we anticipated the VR agencies to make frequent and creative use of Northern Network for that purpose. To that end, as previously discussed, our original choice for our primary contact person with each agency was the staff development officer.

Over time, however, we experienced a reluctance from both of these persons to take full advantage of the medium. In New Hampshire, the training person simply seemed to distrust teleconferencing for training, and gradually he withdrew from involvement with the project. He was replaced by the coordinator for deaf programs, not because of her job responsibilities, but because she was interested in the possibilities of the Network. In Maine, the training person remained our primary contact throughout the life of

the project, and although she seemed to have mixed feelings about the Network's value, she was active in assisting in scheduling and arranging various types of sessions.

This enigmatic situation concerning teleconferencing and training may be attributed to a number of causes. First, both persons were extremely busy, and viewed their assignment to assist the Network as an added burden. Second, both agencies were enduring difficult financial times, with New Hampshire experiencing a significant reduction in personnel due to mandates from a conservative Legislature. Finally, it seems likely that trainers and educators place a high premium on face-to-face encounters, and view training delivered over an audio network as being inferior.

To the credit of both agencies, some training was delivered. However, topics chosen and the style of delivery were inappropriate to teleconferencing. Although Northern Network staff made continual offers to assist in training design, the agencies declined the help. Thus, the sessions tended to be lengthy, dull lectures with little opportunity for interaction; and field staff found them to be uninteresting.

In the winter of 1980-81, we decided to develop a series of model training sessions to be jointly delivered to the Maine and New Hampshire VR agencies. The Operations

Coordinator, using suggestions by agency staffers, worked with Dr. Paul Corcoran to develop a one and one-half hour seminar on spinal cord injury. Dr. Corcoran was director of the Tuft's University Research and Training Center, and an interesting and informed speaker. The seminar itself was designed around a format which included a minimum of one-way monologue, and a maximum amount of interaction around questions. The seminar was quite well planned, even to the level of having all handouts color-coded, so that Dr. Corcoran could say "now take a look at the blue chart." As a result of the combination of a design that utilized the interactive quality of the medium, an interesting topic, and a good presenter; this session was the most highly rated teleconference ever held on Northern Network.

Subsequent to this seminar, two more were held. Dr. Corcoran again hosted another session, this time on multiple sclerosis. In the spring, Northern Network received a grant from the World Rehabilitation Fund for a seminar on medical ethics by Dr. Ruth Purtilo, on the faculty of the Massachusetts General Hospital. Both of these teleconferences were designed in the same fashion as the first one, and again, both were extremely well received.

One of the aims of the Northern Network project was to promote interstate sharing of information between

human service agencies, particularly the host VR organizations. The assumption we made, buttressed by early interview data, was that personnel from both states felt a need to share approaches to casework and administration.

However, ironically, the most significant interstate use was in the previously-mentioned training sessions developed by HSDI. There were occasional ad hoc sessions arranged by administrators, particularly when a new policy arose; but by and large, this ability to network was rarely used without strong coaching by project staff. Apparently, the needs for interstate sharing were not as pressing as we had originally assumed.

Use of Northern Network by Other Human Service Agencies

One of the most important elements of the Northern Network project was the spread of usage to other human service agencies. A dedicated, four-wire network operates on a fixed monthly charge, and therefore, per hour costs go down as usage increases. In order to be self-sustaining, any network of this nature needs to be used frequently to justify the hefty monthly telephone bill. Thus, part of our marketing efforts involved designing demonstration teleconferences for interested groups, who would get a chance to travel to any of the existing sites, use the equipment, and later purchase usage by the hour if they found teleconferencing to be useful.

Throughout the life of the project, a number of these demonstration teleconferences were held. The first was during the very early life of the Network, and involved the New Hampshire College and University Consortium. The Consortium is a loose alliance of all but one of New Hampshire's institutions of higher education. Because this group saw real potential in teleconferencing, they asked us to put together a demonstration which would highlight the capabilities of the technology. The seminar was two and one-half hours in length, and included "call-ins" from several teleconferencing experts from North Carolina and Washington State.

Other similar sessions were held with the directors of secondary level vocational schools in both Maine and New Hampshire; the New Hampshire Cooperative Extension, the Maine Bureau of Mental Retardation, the Health Education Resource Center at the University of Maine at Farmington, and the Maine Bureau of Public Health Nursing.

These demonstrations led to two tangible results. The University of Maine at Farmington purchased a Darome Convener and became a new site on the Farmington Campus, and the Maine Public Health Nurses became regular users. The other demonstrations, while interesting to the participants, did not stir them to make more use of the system.

Marketing the Network

As was stated earlier, for a network such as this to operate in a cost-effective manner, a number of teleconferences must be held each week. The telephone bill alone was some $4000 monthly in Maine, and $2000 in New Hampshire. Thus, in a worst case situation, if only a single teleconference were held each month in Maine, it would cost $4000. Because of this reality, one of the objectives of the grant related to the addition of new user organizations to establish new sites and contribute funds.

During most of the grant period, project staff marketed the system, either through the demonstration teleconference mechanism, or through sales visits to government and university officials. In short, this marketing effort failed during the life of the grant. However, as we will describe at the end of this chapter, Northern Network still lives, and a new and promising marketing strategy is underway. But we are getting ahead of ourselves. Before that, we will describe the marketing efforts in both Maine and New Hampshire during the period from December, 1980 and November, 1981.

Maine

Marketing in Maine began with the development of a brochure, (attached as Appendix E) an attractive, eye-catching short explanation of Northern Network and how it

might be useful to human services and other organizations. These were mailed out in great numbers to potential user groups. Project staff then traveled to meet with mid-level administrators to describe the Network and how it might be used. We concluded very early that the Network would best be supported by something like a "user cooperative," whereby a number of large agencies would locate teleconferencing equipment within their own offices, sharing costs and time on the system.

Although we talked with a number of administrators, and they expressed a good deal of interest, there was little follow-up by them. We called a second time to offer to assist in their first free teleconference, but the sessions never seemed to materialize.

Finally, we concluded that we were dealing with the wrong level of management and that we needed the endorsement of the real decision-makers in state government. Therefore, we contacted a very receptive director of the State Planning Office in Maine, who, in conjunction with the State's Department of Finance and Administration convinced the Governor of Maine to send a memo to all commissioners urging their attendance at a teleconference demonstration to be held in his cabinet conference room.

Governor Brennan stated:

> I am convinced that a high-quality teleconferencing system will improve government communications and the quality of government services while helping us to reduce fuel consumption and cost. For this reason, I strongly urge you or your senior administrative assistant to attend the June 22 presentation.

The session was sparked partially by a Governor's Management Task Force study, which recommended some form of teleconferencing to cut travel costs. Some twenty representatives from various departments attended the meeting, during which they were given firm cost figures for usage and installation, plus they experienced a teleconference with the manager of an identical system run by the State of Iowa. The account executive for New England Telephone also assisted in the presentation.

Subsequent to this meeting, the Management Task Force developed an implementation plan which specifically called for increased use of Northern Network. Administrators from the Executive Department asked us to personally contact the heads of various departments, and gain their commitment in the audio Network. Fourteen interviews were held and a report was prepared for the Director of Finance and Administration. This was in late August of 1981, only two months from the point we had projected that funding for the Network would run out.

For a few weeks, nothing happened. Finally, in somewhat desperate straits, we approached one of the high officials of the Management Task Force, a senior vice

president of Maine's largest corporation. We stated that unless state government took some action, it would lose this cost-effective communication network. Within days, he met with other Task Force members and strongly suggested to the Finance Director to, as he put it, "get his act together and do something." The Finance Director then consulted with several department heads, and reported to Northern Network's project director that, "there was no concrete interest in greater usage of Northern Network, and apparently most of the agencies don't hold meetings."

We also attempted to market the Network within the University system, to link the seven campuses together. The Vice Chancellor for Facilities met with us on several occasions and showed interest in Northern Network, particularly if it could be wired through the University's PBX system to regular telephone jacks. New England Telephone engineers spent several months working out this technical possibility, and finally concluded that, yes, theoretically it could be done; but probably not in reality.

New Hampshire

To some degree, marketing in New Hampshire was more difficult than in Maine. First, we were an alien state trying to sell services, and we also simply did not have the contacts that we had in Maine. However, we worked first with the New Hampshire Consortium of Higher Education, who in turn tried to market the Network to constituent

institutions. As was typical of all our marketing efforts, there was some interest, but little activity. The University of New Hampshire considered wiring up their several campuses, but failed to make a decision.

We also spent a substantial amount of time with the New Hampshire Department of Health and Welfare, the State's largest agency with some 12,000 employees. Real enthusiasm was shown by this group, and several demonstration teleconferences were held. The Commissioner himself was impressed by the system, and assigned his chief aide to work with us. Unfortunately, our negotiations came at a time when the Department was being severely cut by the Legislature, and the aide finally confided to us that the Department would be unable to spend any funds at a time when they were having to lay off personnel.

Project staff held several meetings with the New Hampshire Comptroller, a man noted for his control of state funds. He was quite intrigued by the Network, and helpful in referring us to agency heads. However, by September, 1981, at a time when he was attempting to portion out 20% budget cuts among agencies, he shrugged and said, "this State is in shock, and I'm sure you won't see a nickel until we've had a few months to recuperate."

Thus, at the end of the grant period, we had accomplished many of our objectives. Northern Network had been put in

place, and was up and working. The VR agencies were active and enthusiastic users. Some usage had been made by other agencies, but the hoped for "spread effect" did not materialize. In the final chapter of this report we will discuss and reflect on the marketing process because we now believe them to be critical. The final outcome for Northern Network, however, was to run out of funds and to cease operations on November 15, 1981.

Postscript

Stories should have happy endings, and Northern Network's saga has been like a Saturday afternoon melodrama. There is more to tell. After negotiations with the New England Telephone Company, HSDI and the VR agencies decided to redesign the circuit, removing the SS-4 circuit and cutting the telephone bill by approximately 40%. The privacy issue began to take a backseat to costs. In the meantime, the Rehabilitation Services Administration has contracted with HSDI to reactivate the Network and use it for a laboratory to design training materials on teleconferencing to be used by other state VR agencies. Thus, Northern Network now has costs covered for several more months, during which time, we will market the system to private businesses as well as state and university campuses. Hope springs eternal, and interest again seems high.

CHAPTER TWO

EVALUATION RESULTS

EVALUATION RESULTS

INTRODUCTION

As we stated in the original proposal for Northern Network, we feel that both formative ("how we did it") and summative ("what we did") data is of value to readers of this report, particularly those persons planning to develop a teleconferencing system for similar purposes. To that end, the previous chapter was written to give some understanding of the process and efforts required to establish this type of interactive audio teleconferencing system. The current chapter will discuss some of the "hard data" which we collected throughout the project's life.

These results are compiled from four sources: a basic meeting data form, a questionnaire given to each leader of a teleconference subsequent to the session, a meeting reaction form administered to participants from selected teleconferences, and an attitudinal reaction form administered to New Hampshire VR personnel both prior to and one year after the installation of the interactive audio network. Results from each of these instruments will be described in turn.

BASIC MEETING DATA BASE

During Northern Network's formal operational period, 12/80 - 11/81, the Network Coordinator kept a running log of usage of the system. A copy of the log form is included in the evaluation instrument appendix. Data collected included the number and location of participants, duration of the teleconference, leader location and participant group, and comments about the audio quality of the Network. This information was stored in a special computerized data base which also permitted an analysis of the amount of travel costs and employee time saved by using a teleconference rather than a face-to-face meeting.

The travel savings were computed at the then current reimbursement rate for each state, and the employee time loss from traveling was figured at the employee's current salary level and was labeled "productivity costs." The computer program, authored by the project director, assumed carpooling by multiple participants from the same location, with a maximum of five persons per car. We estimated an hourly charge of $50 per hour in New Hampshire and $80 in Maine for teleconferences after the grant was over.

The results from this data gathering effort are presented in two forms. The first represents the hypothetical total and average cost savings for all teleconferences held. That provides the most optimistic assessment of cost justification of teleconferencing, in that it assumes

that every teleconference is replacing some form of face-to-face meeting. This one-to-one replacement is a fallacious assumption, since teleconferences usually substitute for only a portion of traditional meetings. However, these most cost effective figures are presented below.

TOTAL HYPOTHETICAL COST AVOIDANCE

State	Travel Costs	Productivity Costs	Total
Maine (96 meetings)	$26,596	$79,798	$106,394
New Hampshire (119 meetings)	$ 8,394	$20,605	$ 28,999

Average Per Meeting Hypothetical Cost Avoidance

State	Travel Costs	Productivity Costs	Total
Maine	$277	$831	$1,108
New Hampshire	$71	$173	$ 244

These figures for the two states are quite impressive. One fact is immediately apparent; Maine is larger than New Hampshire, and every teleconference saves four times the potential costs in travel and employee productivity. These figures also show an administrator the possible upper limit to cost avoidance if he or she mandates that

teleconferences replace all face-to-face meetings. While this is certainly not a recommended policy, it does suggest what kind of savings can be made if and when an organization needed to make drastic travel reduction.

The second approach to defining cost avoidance utilizes one data element from the Leader Questionnaire, a document to be described more completely later in this chapter. On this questionnaire, each leader was asked whether or not a particular teleconference replaced a face-to-face meeting. In Maine, leaders stated that 30 of 96 teleconferences, some 31%, were truly replacing traditional meetings. In New Hampshire the figure was similar; 54 of 119 teleconferences replaced face-to-face meetings, or 45%. Travel savings and employee productivity costs were computed for each of these true replacement meetings, and these figures are shown below.

TOTAL ACTUAL COST AVOIDANCE

State	Travel Costs	Productivity Costs	Total
Maine (30 teleconf.)	$8,606	$29,481	$38,087
New Hampshire (54 teleconf.)	$3,574	$ 8,091	$11,665

Average Per Meeting Actual Cost Avoidance

State	Travel Costs	Productivity Costs	Total
Maine	$287	$983	$1,270
New Hampshire	$ 66	$150	$ 216

These figures, while substantially lower than the previous ones, still suggest major cost savings through the usage of teleconferencing in the form in which it was practiced by these two agencies. It also points out an additional piece of information. While advocates for teleconferencing vigorously stress travel cost reductions, it is clear that the greatest potential savings relate to employee productivity. For every travel dollar saved through teleconferencing, $3.42 and $2.27 were saved in employee productivity in Maine and New Hampshire respectively. And while these are not direct out-of-pocket expenses, they are real costs, nevertheless.

Our records also give some indication of how many persons participated in teleconferences during the eleven month period. In Maine, 2632 persons were involved in a teleconference. In New Hampshire, 1681 people teleconferenced. These figures need some clarification. The totals do not mean several thousand different individuals, rather they were primarily generated by the same core group of individuals meeting twenty to sixty times during the eleven months.

New Hampshire tended to have smaller teleconferences than Maine, with an average of 11.5 persons per meeting for the former, versus 27.4 for the latter. A casual observation which supports these figures is that the New Hampshire teleconferences appeared to be more interactive than many of those in Maine. With two dozen people meeting, it is difficult to maintain a high level of interaction.

Leader Questionnaire

As noted earlier, after each teleconference we mailed a questionnaire to the leader, querying him or her about reactions to the session. This questionnaire provided a wealth of information, which offers a glimpse of how teleconferencing was used in this project. For example, while 31-45% of the meetings were perceived as true replacements for face-to-face meetings, another large group of teleconferences (21% in New Hampshire, 33% in Maine) were considered to be supplements to face-to-face meetings. Examples of supplements were teleconferences which were used to plan for upcoming face-to-face meetings, or for additional discussion of material from traditional meetings. They did not replace any meetings per se.

Teleconferencing also provides a medium for new forms of meetings - sessions which would never have been held were it not for the technology. We asked teleconference leaders about this use of Northern Network, and they responded that in New Hampshire 21% of their sessions were original forms of meetings, bringing together people for a meeting which would not have been considered practical without the medium. In Maine, 13% of the teleconferences were considered original by the leaders.

We provided leaders with a fourth option to this question: whether or not they felt the teleconference was primarily for training; teaching participants new concepts,

procedures or skills. New Hampshire leaders felt that only 7% of their 119 teleconferences were for training, while Maine leaders felt that 24% were for this purpose. In reviewing agendas for some of these training teleconferences in Maine, it appears that they might more appropriately have been classed as administrative policy dissemination meetings.

We were also curious as to the amount of face-to-face interaction that each group of participants had in addition to teleconferencing. This question provided some rough measure of frequency of meetings, and the communication patterns of each agency. A summary of responses suggests that both the Maine and New Hampshire teleconference leaders believed on average that they met less than monthly face-to-face with participants. This suggests that face-to-face meetings among teleconference users were not common.

If that were the case, then, how would the information in the teleconference have been transmitted or shared? Buttressing their earlier responses, leaders stated that information would have been discussed at face-to-face sessions, probably stored up and discussed at day-long meetings. If the information were not shared face-to-face, Maine felt that the most common means of transmitting information would have been through formal memo, and in New Hampshire the belief was that the information would not have been transmitted <u>at all</u>. Neither agency seemed to see the potential of operator-assisted conference calls, since

none of the leaders felt that they would have used this approach for information exchange, although they did state that in about 10% of the cases, without teleconferencing they would have resorted to one-at-a-time telephone calls to all participants.

Finally, we asked meeting leaders to reflect on the teleconference, comparing it to a face-to-face meeting. We chose four dimensions; the amount of information that could be exchanged in a given amount of time for each medium; which medium was the most warm, friendly and personal; which was the most highly democratic and interactive; and which medium each leader preferred for this particular meeting. The combined results for these two states are presented below.

MEETING MEDIUM COMPARISON

	Teleconferencing	No Difference	Face-to-Face
1. Most information exchanged in allotted time	182 (84%)	18 (8%)	16 (7%)
2. Most friendly, warm and personal	5 (2%)	84 (39%)	125 (58%)
3. Most democratic, high interaction between participants	72 (34%)	69 (32%)	73 (34%)
4. Your preference for the medium for this meeting	170 (80%)	10 (5%)	33 (15%)

Information from the above table suggests that the leaders viewed these teleconferences as a useful way to

accomplish administrative work. While they did not see teleconferencing as being as warm and friendly as traditional meetings, and were uncertain about the democratic advantages of each medium, they overwhelmingly thought that teleconferencing was a more efficient medium for information exchange, and preferred it.

What conclusions can be drawn from the meeting leader questionnaire? First, it appears that leaders do see teleconferences providing a substitute for some meeting-related travel, as well as supplementing face-to-face meetings and providing a new medium for information exchange. This result, coupled with the previous cost analysis strongly suggests that travel funds and employee productivity were saved. The data also point out that the medium was probably underused for training purposes, a fact upon which we will reflect in the next chapter. The information hints at what those of us who worked closely with each agency believe; that neither now have the funds for many face-to-face meetings, and that teleconferencing fills an important gap. Finally, it is clear that the leaders liked the technology, felt it was efficient, and as one administrator pointed out, "teleconferencing allows us to get business done."

Meeting Reaction Form

At two points during the operating period of the project, we asked participants to complete a short postcard

type instrument at the end of each meeting. Called the Meeting Reaction Form, it asked five simple questions. A copy of the form is included in the evaluation instrument appendix. The purpose of the form was to gauge the general level of satisfaction with any particular teleconference, and more particularly, how various elements of a teleconference contributed to a participant's general liking or disliking of it.

We therefore combined all the meeting reaction forms for all teleconferences, and performed a correlation of each question with the global question on the form, "Overall, how would you rate this meeting?" In both the pilot test prior to Northern Network and during the Northern Network project itself, we found near identical results. The factors most highly correlated with the overall rating were: usefulness of the information involved (correlation .78 - .81) and how interestingly it was presented (correlation .78 - .80). Other elements, such as user comfort, audio quality, and level of interaction had substantially lower correlations. Apparently, if material has high user value and is well presented, people will listen and pay attention.

Attitudes Toward Teleconferencing (New Hampshire VR)

Although the Institute for the Future was involved in a before and after "snapshot" of communication patterns in the New Hampshire VR agency, we decided to refine and administer an attitude questionnaire to New Hampshire VR staff prior to establishing the teleconferencing system

and then one year later. Since Maine had already experienced the pilot teleconferencing test which had led to Northern Network, we felt that they were contaminated subjects for this study.

The teleconferencing reaction form was developed to assess attitudes and beliefs about teleconferencing both prior to installation of the dedicated audio network and one year after operation began. The instrument consisted of twenty questions, four each to capture data on one of five factors: agency morale, (e.g., "This agency is doing a good job."); saving of money from teleconferencing, (e.g., "With gas prices the way they are, this system should be valuable to the agency."); substitution for other forms of communication, (e.g., "A lot of our phone calls and memos can be replaced by teleconferences."); provision of new access to information, (e.g., "I think we will gain new ideas through this system."); and a global factor concerning the potential value of teleconferencing, (e.g., "This teleconferencing system is a good idea.") Questions were rated on a seven-point, Likert-type scale, from strongly agree to strongly disagree. The instrument also had a question about job classification and one concerning the subject's age.

Questions were randomly ordered, and to correct for response set, random questions were written in a negative format, (e.g., "We aren't very cohesive as an agency.")

One hundred and fifteen questionnaires were mailed to all DVR staff, excluding Special Education, in late August, 1980. The audio conferencing system was scheduled for installation in early September, but was delayed until early December. Seventy-three records were returned; twenty-one administrators, thirty-four counselors and eighteen secretaries.

A second set of questionnaires were mailed in August of 1981. This instrument varied only on the verb tense of each question. For example, one August, 1980 question was "A lot of our phone calls and memos can be replaced by teleconference." On the second questionnaire, this became "A lot of our phone calls and memos were replaced by teleconferences."

The response rate for the second mailing was somewhat less than for the first, although the ratio of response from each of the occupational groups remained approximately the same for both administrations of the instrument. It is important to note, however, that we were unable to identify specific respondents for either administration, and therefore, we cannot be certain that we have a true before and after look at the same personnel. We can only hope that persons who responded in 1980 also responded one year later.

In order to select questions which appeared to measure the separate factors described previously, a correlation matrix was established. A single question was selected

to represent each factor. Each question selected was highly correlated with similar questions ($r > .6$) and relatively uncorrelated with other questions ($r = .04$ to $.34$). Thus, we were analyzing relatively pure factors.

The results from this study are presented in graphic form on the following page. The graphs depict scores before and after the system had been installed. The shaded area represents the midpoint of the scale. Results are broken out by occupational subgroup because of the somewhat differing attitudes of each. We will discuss the results for each subgroup and then consider the attitudes of the total agency.

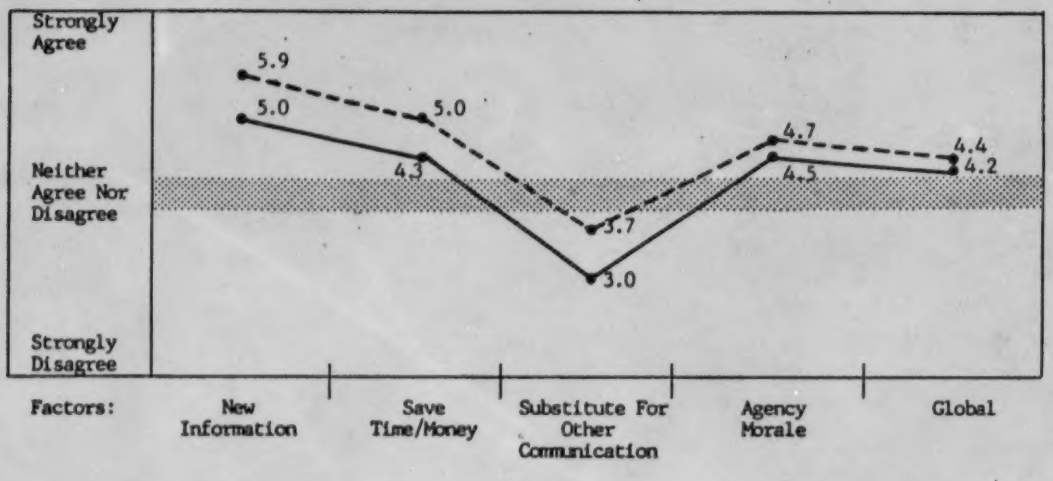
DVR Administrators

Administrators initially felt that they would gain new information, but teleconferencing would not act as a substitute for any other communication. They appeared to be uncertain as to whether or not the new technology would save time and money, or whether the system was a good idea. Although less than other staff members, they felt agency morale was low.

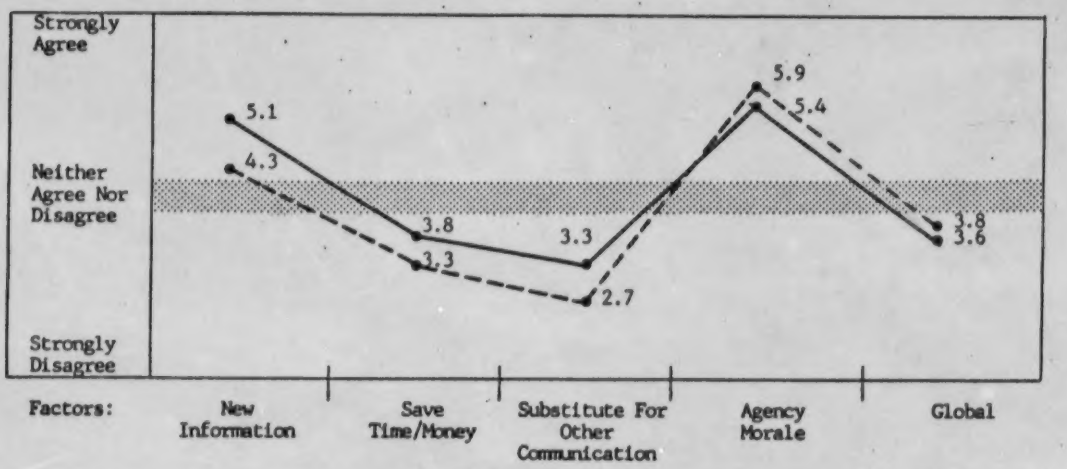
One year later, there was a generally positive trend in administrator attitudes. In reflecting on the Network, administrators felt that it had saved money and time, and were even more certain that new information had been gained through using it. This group seemed to have changed somewhat in a positive direction concerning their

PRE-SYSTEM AND POST-SYSTEM ATTITUDES

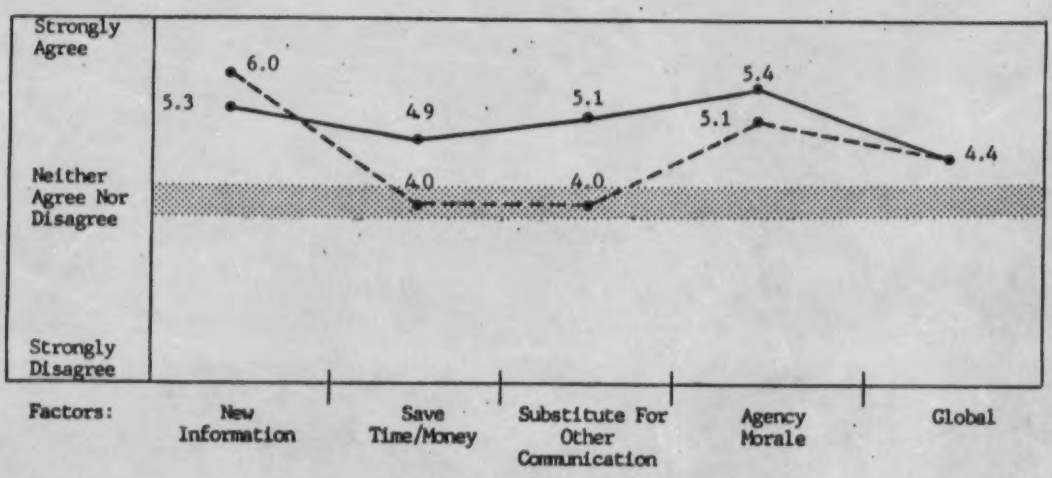
NH DVR Administrators



NH DVR Field Counselors



NH DVR Secretaries



Legend: ——— 9/80
- - - - 9/81

beliefs about communication substitution. Shifts in the other two scales are probably not significant.

DVR Counselors

Results from the first measurement period indicate that, like administrators, they believed teleconferencing would provide them with new information. They were certain that agency morale was low, and had generally less positive responses to other questions related to expectations of the system.

After having teleconferencing capability in the agency for one year, counselors showed almost a mirror image shift in attitudes as compared to the administrators. Counselors no longer seemed to see teleconferencing as a medium for new information, and did not believe that the system would either save time and money, or replace any other form of communication. A year later, they saw agency morale as even lower than the previous year. In general, teleconferencing had not met this group's expectations.

DVR Secretaries

Uniform optimism characterized this subgroup's initial expectations. They saw great possibilities from teleconferencing; although they also believed that morale was low in the agency.

After the first year, the secretaries were quite certain that they had gotten new information from the Network, but were perhaps more realistic about the amount

of money saved or teleconferencing's substitution for other forms of communication. They felt that morale was somewhat better; and like the administrators, felt a cautious overall optimism toward the value of the system.

What tentative conclusions can we draw from this before and after attitudinal assessment? One clear finding is that morale started low and continued low throughout the period. We asked about morale to see if teleconferencing might have a positive impact on this variable, although no causative relationship could have been inferred. Since there was no change, we can draw no conclusions relating this variable to teleconferencing.

A second finding is that field counselors were disappointed by the system. They had hoped for more new information from the medium, but did not get it. From usage data, this seems to make sense. The primary use in New Hampshire was between field supervisors and the central office staff. Counselors did not make much use of the Network, except during teleconferences initiated by HSDI.

A final point to be considered was what we have now come to call the "secretary response." In similar earlier studies in Maine, using a different instrument, we noted the same positive attitudes. Although it appears that teleconferencing does not save secretarial time, it does

provide them with either direct or indirect access to information about the agency as a whole; something they did not have previously. Another factor may be involved in this result. Secretaries were our contact persons at each site, and were more integrally involved in the operation of the Network than other groups. Because they set up the equipment and frequently held test teleconferences, they formed an informal group which allowed them to chat among themselves for brief periods.

Overall, the assessment before and after the installation of the system provided quantitative information that supported our own beliefs about the agencies response to teleconferencing. Administrators used the Network and liked it, counselors were infrequent participants and were disappointed, and secretaries felt positively inclined toward the system.

The final chapter of this report provides an analysis of the Northern Network project, and some learnings we would like to share with readers who are interested in this form of teleconferencing within organizations similar to the Maine and New Hampshire VR agencies.

CHAPTER THREE

ANALYSIS AND DISCUSSION

ANALYSIS AND DISCUSSION

INTRODUCTION

In this final chapter we will concentrate our efforts on taking a long view of the Northern Network project, in an attempt to pull out learnings for others who may have an interest in implementing a dedicated audio system for small, geographically spread organizations. Much of what we have learned has come from discussions with actual users, persons we hoped would become users, and our own day-to-day reactions. When what we put forth is supported by data, we will provide that backstop.

Turf and Costs

When we began Northern Network, we were faced with a choice; how to build a "user cooperative" of human services organizations in two states. After some thought, we decided to use a demonstration model, wherein we would work closely and intensely with one small agency in each state (vocational rehabilitation), and then expand users by letting them use space in VR offices. This choice necessitated that other agencies pick up materials and travel from a few feet to a few miles. More importantly, agencies felt that they were guests in another organization's space, and were generally uncomfortable with that situation. Throughout the duration of the grant, users

frequently asked questions about how equipment such as this might be available on their own premises. This was when cost became a factor. When we suggested that adding sites meant the purchase of a Darome Convener, an installation charge, and a share of the monthly telephone bill; potential user organizations became leery of the long term commitment. We, ourselves, were somewhat reluctant to add new sites, since it was difficult to assess whether a new site would generate the business to offset the cost of start-up and monthly charges.

Our learning from this was more the discovery of a problem than of a ready solution. People like to teleconference on their own space, and will therefore make greater use of the medium if it can be easily accessed. But multiple hard-wired sites peppering the landscape adds a great deal to both the cost and to the electronic complexity of the Network. From this problem came two other areas of thought.

Dedicated Networks vs. Bridges

A dedicated network, made up of leased lines connecting fixed locations has a number of advantages. First, the audio quality of the network is superior to other forms of teleconferencing, because the lines, switches, and relays have been custom engineered and balanced by the telephone company. In addition, since the network uses four instead of the normal two wires, there is a true

duplex operation wherein people from two locations can speak at the same time. This eliminates the "clipping" one commonly experiences in operator-assisted conference calls.

Dedicated networks also have certain disadvantages. One is the problem described above, the difficulty of having fixed sites which must either be shared, or duplicated at great cost. A second is the fixed monthly telephone charges, costs which are incurred whether or not the network is used for one or hundreds of hours per month. To pay for itself, a dedicated network must have heavy usage.

The second form of teleconferencing uses a device called a "bridge." Participants call a particular telephone number at a prearranged time, and all the lines are electronically joined like a giant, albeit temporary, party line. The advantages of a bridge are precisely the opposite of a dedicated system; sites can be anywhere there is a telephone, and costs are related to use. If the bridge is not used for a month, there are no telephone charges. The disadvantages are that the audio quality is not as good as a dedicated network, and the per hour costs of a teleconference may be quite steep. When persons teleconference using a commercial bridge, they pay the regular telephone toll costs (roughly $20 per hour), plus an additional $20 per hour for each caller to rent the bridge facilities.

We opted for a dedicated network, believing that usage would spread. In retrospect, we might have considered a bridge system, partly due to the next thing we learned.

Large Organizations vs. Small Organizations

Both VR agencies in this study were small, with less than 200 persons in each. Both were organizations which had a close relationship to HSDI, and who expressed an interest and need for teleconferencing. As the research data demonstrates, both agencies like teleconferencing, use the technology for their organizational needs, and are willing to pay for access to this form of meeting. The difficulty with these agencies is that they are both too small to generate a critical mass of meetings on their own. The most successful similar network is part of the Department of Health and Welfare in Iowa, an agency with several thousand employees. This large umbrella organization seems to have enough meetings to cover costs.

To hazard a prediction, a teleconferencing system utilizing a bridge would best serve smaller organizations which held fewer meetings; while a dedicated network would be most cost effective in a larger organization. This belief, of course, only holds for organizations which are spread over a reasonably small area, like a single state.

the size of the group. The New Hampshire area supervisors and central office staff represent a small group of eight which met weekly. With one or two persons at each site, they appeared to be the most comfortable, interactive, and lively group of users. Frequently, the talk was so informal and relaxed that if the teleconference had been typed, a reader would have been hard-pressed to be certain that it wasn't a face-to-face meeting.

On the other hand, Maine frequently had large group teleconferences, which often consisted of six to eight people at each of thirteen sites. At teleconferences of this type the atmosphere was quite formal, often with a single presenter providing information. While the size of the group discouraged spontaneity, often the information presented was of such high value that participants had to put up with what could be described as "dull radio."

High Value vs. Low Value Information

The audio-only medium carries a special burden. Without visual stimulation, persons designing teleconferences need to take extra care to make sessions interesting. There are a number of instructional design techniques to aid in this task, but one of the most simple was to be certain that the information being discussed was of high value to the participants. As the results from the meeting reaction forms showed in the previous chapter, a teleconference was highly regarded if participants learned

or discussed a topic which they felt was important. Any teleconference during which there was talk of budgets or personnel cuts were well attended and highly rated, with participant comments such as "got out what I needed." Conversely, training sessions, which often provide information of a broader nature and less immediate need, were frequently less well regarded by participants, unless great care was made to present the material in an interesting fashion, using a number of different speakers, building in interactive segments, and providing handout materials in advance.

Inside Organization vs. Outside Organization

In New Hampshire, and to a lesser degree in Maine, we were perceived as outsiders. We were aware of this from the beginning, and made frequent visits to all offices to help bridge the gap. To our credit, we now believe that we were successful in minimizing the insider-outsider boundary. What we lacked, however, was a firmly committed "hero-advocate" within each organization; someone who possessed high organizational status and who was willing to champion the technology for a significant period of time. While both agency directors were favorably inclined toward teleconferencing, their support was of a passive nature. The New Hampshire director rarely used the technology, delegating it to subordinates.

Push-To-Talk vs. Voice-Activated Microphones

The Darome equipment at all sites used microphones which required the speaker to press a lever to speak and to be heard on the Network. Some conferencing equipment allows for open microphones, which are activated by the speaker's voice. In essence, the circuit instantly transmits the first or loudest sound from any location. Voice-activated mikes lend a certain informality to teleconferences, eliminating the conscious step of pressing a lever. In our case the choice of push-to-talk microphones was dictated by the complexity of our circuit. With a number of sites in the two states, potential ambient noise, such as typewriters or coughing, would have created serious difficulties for listeners.

There are those in the teleconferencing field who believe that push-to-talk mikes hamper the free exchange of information, creating more formal and stiff teleconferences. This was not our experience. Frequent users adapted to the technology, and even became proficient at pressing the lever when they were laughing, providing spontaneous feedback. What did create formality was the next learning.

Large Group vs. Small Group

Since we monitored all teleconferences to make certain the technical quality was acceptable, we had a chance to observe differences in conferences which were related to

We now believe that a critical element to successfully implementing a teleconferencing system is having a person within the organizational structure, preferably, the organizational head, who is willing to make a strong commitment, both financially and behaviorally.

Teleconferencing and Savings

One of the questions most commonly asked of us was, "Will this Network save us money?" In general, vendors of teleconferencing say yes, and the researchers say maybe. Our research results suggest that the users of Northern Network thought that it did avoid travel costs and productivity losses from journeying to meetings. We would now come down somewhere between the vendors and the researchers; in that we believe that teleconferencing probably avoids some travel-related costs, but not to the extent commonly put forth by salespersons.

Teleconferencing and New Information

The New Hampshire attitude data supports the assertion that users thought they had access to new information. We believe that this is probably the greatest asset of teleconferencing. Although it is difficult to sell at a time of tight budgets, the freedom and ease by which other people can communicate is a real strength of the technology. Teleconferencing brought information to field workers which they might never have gotten, and although we have no data to support it, we were told that this informational access was a real boon at times of crisis.

Adopting the Technology

Perhaps our most profound learning was that the benefits of teleconferencing which were so obvious to us from the outset were less obvious to the users. The users had to be sold, and the selling process was complicated by technical problems from the equipment. Installing an audio system such as that used by Northern Network is slow and technical problems are frequent. A few bad experiences with the technology lead users to reject it. Returning to a previous statement, we believe that a teleconferencing system needs the active vocal and financial support of the organizational head; and that this commitment needs to be over a several year period.

Multiple years are needed because of the psychological processes involved in incorporating this technology as simply another organizational tool and not a "gadget." We found that time and time again, users planned and held face-to-face meetings because they simply did not connect the technology to their needs. When reminded of the teleconferencing system, they would look blank for a moment, then realize the savings of time and trouble they could have had by holding an electronic meeting. It appears that, as with most new technologies, time and successful usage are required to permit users to "think teleconferencing."

Support for Users

Because of the previous learning, we believe that teleconferencing users need aid in employing the technology to meet their needs. People hate to appear as inept or clumsy, and teleconferencing puts one at risk of making a public fool of one's self by either technological failure or inappropriate teleconferencing behavior. Commonly, first time meeting leaders who did not have access to a short training session would be perplexed by silences which were generated by nondirected questions like, "Do you all agree with what I just said?"

User support goes beyond simple training. It includes continuous contact with individuals and groups within the organization who might have a reason to meet, and suggesting to them ideas for teleconferences. This is time-consuming work, but essential if a teleconferencing system is to be used to its potential. Our experiences suggest that this user support is probably a continuous need, at least over a period of several years.

All in All, People Like Teleconferencing

Much of what has been said previously may create the image that involvement in teleconferencing is like blundering through a mine field. That is not the impression we want to leave. What we have chosen to highlight are decisions, signs, and choices that we ourselves encountered; and we want to provide the potential teleconferencing

implementer with a copy of our own sketchy roadmap.

However, the fact remains that these learnings stand out from a backdrop of user satisfaction, particularly those users who had frequent and easy access to the technology. These users complained occasionally, disparaged the technology at times, and were discouraged and disappointed when the system did not meet their expectation either by malfunctions or intrinsic limitations. However, our research data, and the data gathered by the Institute for the Future, support the belief that overall, teleconferencing was helpful, useful, and usable to agency staff. Two experiential findings also support this view. Twice during our teleconferencing activities in the last few years, we have shut down the system for several months. During each hiatus, personnel from the VR agencies would contact us to see when the Network was going to be turned back on, saying things like, "I'm getting tired of driving to Augusta." The other phenomenon occurred when agency staffers were holding a demonstration teleconference for visitors. At those times VR personnel would invariably speak of "our system," describing it with some measure of pride and ownership.

APPENDIX A

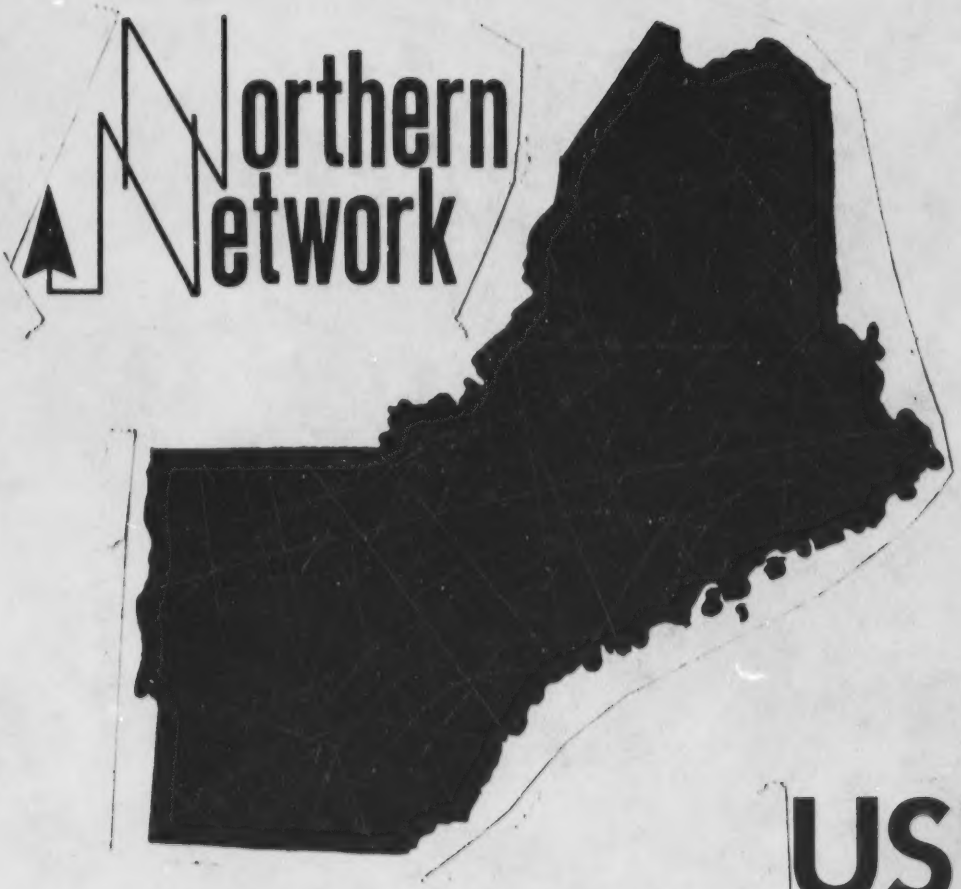
USER GUIDE

By:

Robert M. Threlkeld, Ph.D.

and

Pamela S. Pease



USER GUIDE

Developed by

NORTHERN NETWORK

Project Staff

Robert M. Threlkeld, Ph.D.	Project Director
Pamela S. Pease	Operations Coordinator
Lin MacNair	Research Aide

HUMAN SERVICES DEVELOPMENT INSTITUTE
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August, 1980

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SECTION A

How to Think about the Northern Network

HOW TO THINK ABOUT NORTHERN NETWORK

Having a new technology available is no guarantee that it will ever be used. Unless it provides opportunities to make life simpler, less costly and more rewarding, electronic gadgetry will sit and gather dust in someone's quiet corner.

Maine and New Hampshire now have an audio-conferencing network for human services. As of October 1, 1981, it links fourteen locations in Maine and six in New Hampshire into a private telephone network. Sites are primarily located in Vocational Rehabilitation offices in the two states. The project Fact Sheet in this manual describes the network's structure.

In this document, you will learn about how the system works, how to plan and attend effective "teleconferences" (meetings of small groups over electronic mediums), and the particulars of system operation. This first statement is meant to help you begin the process of incorporating this new communication potential into your consciousness.

In previous teleconferencing work we have found that this process of mental acceptance is slower than most people imagine. Recently, one secretary in a state agency called us and exclaimed "I can't go to your meeting Monday, I'm supposed to be here in the office." When we reminded her that "going to" the meeting simply meant turning on the teleconferencing equipment, she stammered "I keep forgetting." It takes time to adjust one's way of looking at communicating.

A. Northern Network allows people in Maine or New Hampshire to talk among themselves at any selected locations in each state.

   This system will allow you to replace some of your regular meetings, where participants have to travel to a central location. If area directors come to Concord twice a month to meet, get together one of those times through teleconferencing. If in the past, you had to send letters and make phone calls to plan for an annual advisory board meeting, telecon-

ference once or twice instead with a planning group before the face-to-face session.

Also, consider the possibilities of new information exchanges which could not occur without this network. Case staffings are a good example. A direct service worker with a particularly thorny casework problem can arrange to teleconference with other workers from locations throughout the state, and get advice which would not have been possible without teleconferencing.

B. Maine and New Hampshire sites can talk with each other over the network.

While the system can operate separately and simultaneously in each state, it can also function as a single two-state network. To what end? Perhaps special education instructors in Portsmouth, Keene, Augusta and Portland want to discuss a common problem. This crossing of state lines is performed by us simply pressing a button at HSDI. Maybe agencies in the sister states want to develop a common response to a Federal action. This can be readily done using the two-state connection.

C. It is possible to telephone directly into the network.

This one feature enormously expands the potential of the network. Through advanced switching technology, HSDI is able to "patch in" two callers from a regular phone set. Imagine Maine and New Hampshire workers wanting to meet with a noted professor, government official or resource person. HSDI will simply phone that person, flip a switch, and the person will be able to speak and be heard in either or both states.

This potential permits training to be delivered by an instructor anywhere in the country, and opens up communication possibilities with the entire

public telephone system. For example, using the call-in feature of the system, one could hold a panel discussion with speakers located in Miami and Chicago.

These three features of the Northern Network allow for countless user communication options. However, to be most effective, the system needs to be used for thoughtful and well planned meetings. The material that follows should provide you with the help you need to begin experimenting with teleconferencing.

SECTION B

How to Plan a Teleconference

HOW TO PLAN A TELECONFERENCE

We have all been involved in meetings in which before, during and after them we were left scratching our heads wondering why they were ever held. The leaders of such meetings may have attempted to cover such a wide range of topics that none could be resolved or discussed in entirety. There may have been one participant who monopolized the discussion leading whatever topic there was astray. So we all left bored, frustrated and tired, with our time wasted.

If face-to-face meetings have the potential to become wandering disasters, audio teleconferences, because they lack the visual dimension, are even more risky. Having a technology that projects voices over miles of wire is no guarantee that the talking will be valuable. A meeting leader needs to prepare carefully for a teleconference, but when well-planned the electronic meeting can be an effective, efficient tool which informs people without forcing them to travel. This planning effort should also encourage you to become better organized, briefer and more focused.

The keys to a successful teleconference are advanced planning, coordination and distribution of meeting materials. These occur around the following components:

Scheduling	When
Agenda	Why and What
Participants	Who
Location or Sites	Where

Support and Background Materials

Scheduling

The person leading the meeting must schedule time on the Northern Network with as much advance notice as possible. Scheduling involves the selection of a date and precise time which are convenient for both the meeting leader and participants, and also correspond with time available on the Northern Network.

You, the meeting planner, will have a person to contact within your agency

responsible for scheduling. This person will coordinate your agency's use of time with the Northern Network to eliminate mix-ups. A schedule or calendar of events will be regularly compiled and shared with you.

Agenda

The agenda is your written statement of the meeting goal and objectives. The person or persons responsible for meeting, usually known as the "meeting leader," plans the content and time utilization for the agenda. Prior to the teleconference each participant will receive the agenda and any other meeting support materials via the mail.

For you, the leader or participant, the agenda provides a point of focus in accomplishing the goals set for the meeting thus, preventing one from staring off in space.

Below are several steps that will help you plan the agenda:

Step 1: Define the purpose or goal of the meeting.
Example: For Regional Directors to reach agreement regarding a purchase of vehicle policy.

Step 2: If possible, reduce the statement of purpose into a few words or "one-liners."
Example: Purchase of Vehicle Policy

Step 3: Break the goal into small objectives, decisions or "agenda" items leading to the accomplishment of the goal. An outline form is a simple way to list items.

It may be helpful to include specific times on the agenda where participants can present questions. As a leader, this will remind you to ask for feedback. As a participant, you will know that you have an opportunity to be involved at key points in the meeting.

Example: A. Review Policy Draft

1. Overview Policy Development
2. Questions and feedback

As a meeting leader, you may want one or more of your participants to have responsibility for portions of the teleconference. This will take some of the burden off yourself while allowing others to gain experience.

Example: B. Poll Participants Peter Jones

For users holding regularly scheduled meetings, (i.e., supervisors, every Friday) you may find it helpful to build in an item to plan the next agenda or to discuss future teleconferencing use.

Example: Planning for Future Teleconference

1. Suggestions for Agenda Topics
2. Schedule Time/Date

Step 4: You now may find yourself more conscientious of time management. A specific length of time usually one hour, will be allocated for most meetings. It is likely that another group may be scheduled to immediately follow yours so you will want to start promptly and end on time.

If planned efficiently, usually, about twice as much may be accomplished in one hour of teleconferencing as two hours of face-to-face. Even so, you should be cautious about trying to achieve too much in a short conference. Participants will feel rushed, unsatisfied and frustrated by such "over scheduling."

With the goals and objectives broken into agenda items, you may estimate the length of time needed to discuss each. The guidelines for most agenda items is an average of 10 to 15 minutes. This is approximate and dependent on the amount of anticipated interaction among participants. Simple announcements by leaders may

require only five minutes because no interaction is involved.
Example: A. Review Policy Draft 15 Minutes

Step 5: A simple tool for incorporating the above four steps is the use of an established agenda form. You will be able to identify very simply the leader, the time, the date, all agenda items and the speaker.
Example: See sample agenda.

Step 6: A typed copy of the agenda is to be mailed to each participant in advance.

For your convenience, distribution of meeting materials may be done through the person known as the "contact person" for the Northern Network at each site. The contact person will be involved in keeping track of meetings, agendas and participants.

Participants and Locations on Sites

For every meeting, a list of participants and their geographic locations should be compiled and sent with the agenda. This list will commonly be referred to as a "master roster." Like the agenda, the master roster helps orient and prepare the group for the meeting. This will be helpful when participants do not know one another.

Support Materials

As with the agenda and master roster, forethought must be given as to whether your teleconference will need more than simply an agenda. In some cases, you may want to refer in detail to a printed policy or chart, for example. A copy of the policy or chart may be mailed with the agenda materials to all participants in advance. This will allow your participants to be better informed thus enabling a more intelligent discussion.

Other support materials might include slides, films, or a video tape designed to

compliment the teleconference. At each location an identical media presentation might be shown before, during or after the teleconference. Obviously, even more careful attention to details and coordination of proper equipment and its operation must be attended to. Mixing these media could be a creative way to hold staff training sessions through a teleconference.

Once you have gone through this planful process, you can relax. Ideally, all your participants have been notified of the scheduled meeting date and time. You are ready for the next stage—conducting and participating in the teleconference.

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Northern Network

SAMPLE

AGENDA

Date: 10/9/81
Start: 9:00 A.M.
End: 9:30 A.M.

TITLE: REGIONAL DIRECTORS MEETING

PARTICIPANTS: Regional Directors

SPEAKERS:

LEADER: Don Smith, Central Office Administrator

AGENDA ITEM	PERSON	APPROX. TIME	NOTES
I. Purchase of Vehicle Policy	Smith	15 Minutes	
A. Review Policy Draft	(Handout)		
1. Overview of Policy Development			
2. Questions; Feedback			
B. Poll Participants Re: Policy	Jones	10 Minutes	
II. Future Teleconferences	Smith	5 Minutes	
A. Establish Date and Time for September			
B. Planning Agenda			
1. Suggestions			
2. Agreement			

A15

SAMPLE

MASTER ROSTER

October 9, 1981

Don Smith	Central Office
Peter Jones	Portland, Maine
Judith Gleason	Augusta, Maine
Mark Cook	Caribou, Maine
Susan Thomas	Bangor, Maine

SECTION C

How to Run a Teleconference

HOW TO RUN A TELECONFERENCE

If you followed the instructions on planning a teleconference, you and your participants now have an agenda plus any handouts in front of you. You are sitting at a table or desk staring at a microphone ready to begin. What next?

A. **Introduce yourself and the meeting.** After the Northern Network operator tells you to go ahead, say "Good morning" (or afternoon), "Hello" or some similar opening, introduce yourself, and let people know the purpose of the meeting. For example, you might say, "Good morning, this is Joe Smith and I'd like to welcome you to our weekly supervisors session."

B. **Do some sort of roll-call.** After introducing yourself, check to see who is participating at each location. If the meeting was well planned in advance, you and the participants will have rosters of those persons involved. You should check with each location, and find out who is attending the session. An example might be, "George, are you there in Caribou?" ("Yes, good morning.") "Is anyone with you?"

C. **Use the agenda.** Since everyone shares a common agenda in front of them, refer to it as you go along. Without becoming an autocrat, try staying reasonably close to the schedule, and end the meeting on time. The Northern Network operator will remind you when your time is nearly up.

There are a variety of tips on interacting effectively in a teleconference. These should aid you in running a smoother, more productive meeting. While most of them will develop naturally as you use the system, it may help to think about them at first.

A. **Keep monologues short.** One of teleconferencing's major strengths is its interactive quality. Long monologues cause listeners to mentally drift off, since without visual materials to hold a participant's interest, audio teleconferencing can become like bad radio. Keep one-way discourses short.

B. **Solicit feedback.** Even if you have a lot to say, break it into segments and pause for questions every so often. One pointer, particularly with a large number of participants from a variety of locations is to *avoid* undirected questions like, "What do you people think?" or, "Are there any questions or comments?" Participants, especially those new to teleconferencing are inhibited from responding to statements like that. They assume that they may be interrupting someone else from another location who wishes to respond. Try to be more specific like "How does that sit with you, Steve?" or, "I bet you have a comment, Mary." If you want to get a sense of agreement or disagreement from participants, don't depend on one or two comments. Poll all or most of your locations one at a time.

C. **Facilitate interaction.** Aside from giving information, often a meeting leader is interested in discussion among participants. In audio conferences, your role in this is more active than in face-to-face sessions. In regular meetings, participants routinely turn to each other and comment but with audio conferencing you may have to help. When appropriate, use connecting statements such as, "What do people think of Sarah's suggestion? Bill, how about you? How does that relate to the idea you just brought up?" Your role in the activity is similar to a talk-show host, in that you are nudging people into interacting with each other.

D. **Don't panic when you get no feedback.** Initially, talking on this network will be unnatural and uncomfortable and occasionally seem silly. Since you cannot see your participants, you have no visual feedback as to whether they are understanding, listening, or even still sitting there. If you ask a question, frequently there will be a moment or two of silence, during which you will feel sort of lonely. Usually, after a moment you will get a response. If you don't, direct the question to someone (if you fell into the undirected question trap!) or ask, "David, did you hear my question?"

E. **Announce any change in who's participating.** If you are like most people, you will build a mental picture of the structure of a teleconference. You will visualize Ed and Pam in Manchester, Sam by himself in Machias, and

so forth. It is very disconcerting if when asking questions of Sam, a strange voice announces, "Sam had to leave." So, if someone new arrives ("Doctor Davis just came in") or someone leaves, let other people know.

F. **Be an active and focused leader.** While a nondirective style may work in psychotherapy, being quiet and layed back cripples a teleconference. By breeding confusion and ambiguity, a leader who just lets things happen on an audio network soon has a bunch of frustrated participants on his or her hands. If your meeting has a purpose and desired outcome, and if you actively and gently encourage participants toward it, you should have a successful experience.

G. **Give a summary at the end of the meeting.** This advice holds true of any meeting, be it face-to-face or electronic. People like to know what they have discussed and concluded, and a short summary provides a sense of completion as well as a chance to correct any misstatements.

SECTION D

How to Participate in a Teleconference

HOW TO PARTICIPATE IN A TELECONFERENCE

For most people, meeting by microphone is an unnatural act. Sitting in a room, hearing disembodied voices, and knowing you can join them is mildly anxiety-providing. This short paper is meant to give you some tips on ways to make your teleconference more productive and enjoyable.

A. **Press to talk. Release to listen.** The most elementary information needed when using Northern Network equipment is how to communicate. The black bar on the microphone allows your voice to be heard by all sites involved. If you talk without pressing the bar no one hears you.

B. **Don't hold the bar down endlessly.** While this is not always true, if you give a lengthy statement and hold your bar down even when you take a breath, you may not hear questions directed to you from other participants. This is frustrating to others, and may cause you to miss a vital comment from another participant.

C. **Give and ask for verbal feedback.** Since audio teleconferencing does not provide visual cues, speakers need to hear feedback. Frequently, this can be a short, simple response. For example, if you ask a question of someone and get an answer, it is useful to the other person to say "Thank you." If you answer someone else, and hear nothing from them, it often helps if you say, "Did that clear it up for you, George?"

D. **Use salutations and humor.** Audio teleconferences seem to be inherently formal. Therefore, an effort should be made to humanize them. A comment like, "Good morning, Mary, how's the weather up there?" helps informalize the medium. Similarly, short humorous statements seem to break the ice a bit. As in any group session, the emphasis should be on *short,* and we are not recommending long jokes or discourses on the weather.

E. **Use names.** Frequently persons new to teleconferencing don't identify themselves when they speak. This leads to confusion, particularly when

people don't know each other well. It is good practice to begin a statement by identifying yourself and your location, as in "This is Florence in Lewiston." Conversely, when you ask a question, direct it to the individual you mean.

F. **When the leader does a roll-call, identify everyone in the room.** It is unsettling to hear a strange voice come over the network. We build mental pictures of each teleconference, and surprises aren't welcome. Therefore, when the leader asks, "Anne, are you there in Keene?" you ought to say, "Yes, David, and George and Martha are here too." Also, if someone leaves during a meeting, it is helpful to let others in the teleconference know.

G. **Avoid side-conversations.** Because no one will hear you unless you press the microphone bar, it is possible to hold side conversations during a teleconference. We suggest you don't, since it is distracting to the speaker as well as somewhat embarrassing to you to have to say, "Sorry, David, I didn't hear what you said."

H. **Fill out reaction forms.** In order to assess how the network is perceived by users, we need your reactions to it. Forms are provided at each location, and we request you spend 30 seconds completing it and dropping it in the box.

SECTION E

How to Set up for a Teleconference

A25

HOW TO USE NORTHERN NETWORK'S TELECONFERENCING EQUIPMENT

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1. At the appointed time of the teleconference the black conference phone will ring. If there is no ring within five minutes, pick up the phone and check if you can hear the conference. If you can, let the leader know you are on the line. If you can't, dial on a regular telephone (207) 780-4034, and tell the teleconference operator (Lin MacNair) you should be included in the conference.

2. After the phone rings, identify your location (i.e., Augusta) to the teleconference operator, and then wait while she dials up the various locations to be included in the conference. Hold the telephone close to your mouth when talking, since the handset has a special microphone in it.

3. The operator will then remind you to switch to the Convener (conference loud speaker). This is done by plugging the power cord into an electrical outlet and the telephone line into the small telephone outlet. She will also remind you to flip the switch next to the jack to "ON" (toggle away from the wall). Since all teleconference sites have multiple jack locations, you may not be holding your conference near the conference telephone. No problem.

4. The operator will then tell the leader to "go ahead" and the conference can begin.

5. During the conference leave the telephone handset off the conference phone. If you hang up you cut yourself off.

6. When the conference is over, switch "OFF" the Convener jack (toggle toward the wall). If the Convener is to be moved, unplug it and give it to the site contact person.

7. Hang up the conference telephone.

SOME IMPORTANT DON'TS

a. Don't touch the conference phone dial. It can break connections and cause havoc.

b. Don't hang up the phone during a conference.

c. Don't leave the jack switch "ON" after a conference. It's like leaving a phone off the hook, and ties up the circuit.

TROUBLE SHOOTING

This conference network is reasonably reliable, but occasionally causes difficulty to users. Here are some problems and some tips:

1. **No phone ring!**

   See Step 1 on how to use the equipment.

2. **Can't hear over the Convener!**

   See if the red light is on. If it isn't, the power plug probably isn't plugged in. If the red light is on, perhaps the telephone cord isn't in the jack, or the switch is not on. Check both of these. Also check the volume dial on the back of the Convener. It should be 1/3 of the way up.

3. **Can hear over the Convener, but others can't hear you at all or very well!**

   Check the microphone cords. Are they securely plugged in at each end? Are you pressing the bar to talk? Remember to speak directly into the microphone – about a foot away from it.

4. **There is a sharp squealing or feedback noises over the Convener when you press the bar!**

   Check two things. Make sure the microphone is at least 18" (inches) from the loudspeaker and not pointed at it. Then make certain the tiny brass screw marked "PA" on the back of the Convener is 1/3 or less of the way turned up from the counter clock-wise stop.

These are some remedies for common problems. There are other Network difficulties which require help from the New England Telephone Company. If something is going wrong, and you can't figure out why, simply ask for "Lin" over the network. She will monitor the first few minutes of each conference for technical quality. If she is not available, call her at (207) 780-4034. Don't call the telephone repair service, since we have a special unit here in Portland which handles all locations.

SECTION F

Site Contact Persons

SITE CONTACT PERSON

Each site that houses the teleconferencing equipment has a person that serves as a point of contact for teleconferencing participants in each agency's office and the Northern Network staff. This person is the network "Contact Person." Through this person teleconferencing related materials may be mailed and distributed. For example, a monthly schedule for your agency will be bulk mailed from a central location to each office. A contact person will distribute a schedule to each of the staff located in that office. This will insure that every staff member receives a schedule, preventing delays that can occur through individual mailings.

Consult with your contact person when a technical problem arises or when scheduling time on the Northern Network. The contact person will be responsible for the management of equipment, i.e., setting up for a teleconference, reporting technical difficulties, at your site for the Northern Network. Sometimes a technical problem may involve simple reorganization of equipment or replacement of a defective microphone. The contact person may be able to assist you in identifying and resolving a problem. If all else fails, contact will be made to the Northern Network staff for maintenance.

Frequently, rooms designated for teleconferencing are also utilized for face-to-face meetings. To prevent overlapping of schedules for either purposes, check with the contact person to reserve a specific date and time for the space. She/he will coordinate the date, time, and space with Northern Network's contact person, Lin MacNair. Lin can be reached at (207)780-4430.

You will find the contact person vital both as a participant and a meeting leader, in assisting in scheduling time, notifying participants, arranging for proper audio-visual equipment, if necessary. To insure they are kept informed, they will be periodically updated on the Northern Network procedures. Their cooperation with Northern Network staff, meeting leaders, and participants will provide the key link to smooth operation and satisfaction of the network.

CONTACT PERSONS
for
NEW HAMPSHIRE BUREAU OF REHABILITATION

Emmy Lou McLeod

Berlin Regional Office
132 Pleasant Street
Berlin, New Hampshire 03570
(603-752-2271)

Central Office
105 Loudon Road, Bldg. No. 3
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Simone Cournoyer

Concord Regional Office
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Keene Regional Office
25 Roxbury Street
Keene, New Hampshire 03431
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Mae Clapp

Manchester Regional Office
361 Lincoln Street
Manchester, New Hampshire 03103
(603-669-8733)

Linda DiBernado

Portsmouth Regional Office
147 Congress Street
Portsmouth, New Hampshire 03801
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CONTACT PERSONS
for
MAINE BUREAU OF REHABILITATION

Deborah Kilpatrick	41 Washburn Street Caribou, Maine 04736 (207-498-8151)
Joan Graham	Linnehan Building Route 1-A Ellsworth, Maine 04605 (207-667-5393)
Alta Bowley	P.O. Box 277 100 Court Street Machias, Maine 04654 (207-255-8641)
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Eunice Schleicher	1Park Drive Rockland, Maine 04841 (207-594-2521)
Gerri Dodd	Capitol Shopping Center Western Avenue Augusta, Maine 04330 (207-289-2586)
Josephine Shorey	32 Winthrop Street Augusta, Maine 04330 (207-289-2266)

Jackie Dumont	200 Main Street Lewiston, Maine 04240 (207-783-9151)
Sylvia Jones	509Forest Avenue Portland, Maine 04101 (207-774-4581)
Andrea Duquette	121 Main Street Biddeford, Maine 04005 (207-282-6191)
Wanda Andrews	Lower Midtown Mall Sanford, Maine 04073 (207-324-9472)

UNIVERSITY OF MAINE AT FARMINGTON

Betsy Butler	Main Street Farmington, Maine 04930 (207-778-3501)

SECTION G

Northern Network Fact-Sheet

March, 1980

Northern Network

PROJECT FACT SHEET

Background – Northern Network will be a new communication network for human service agencies in northern New England, developed from the belief that both service providers and service users will benefit from greater access to the right information at the right time. In March, 1980, The Department of Education's Office of Telecommunications Policy awarded an eighteen month grant to the Human Services Development Institute of the University of Maine to establish and test a multi-agency, multi-state audio and computer conferencing system.

*SYSTEMS

The Vocational Rehabilitation agencies will act as the first participating agency in the project, with other agencies phased in as the project progresses. In addition to providing the equipment, the project will assist user agencies in defining their telecommunication needs, planning schedules and agendas, and helping in monitoring and evaluating the sessions.

a. **Audio Conferencing**

Fourteen sites in Maine and six in New Hampshire will be joined by leased telephone lines. Participants will be able to speak and listen to all other participants. There will be no video. While the system itself is closed (no one can dial in or out), one or more persons can be "patched in" from any regular telephone by special arrangements. Vermont currently is evolving its own audio conferencing system, which should be compatible with this one, thus allowing three state connections.

b. **Computer Conferencing**

Computer terminals located in the Vocational Rehabilitation offices in Vermont, New Hampshire and Maine will be connected to the University of Southern Maine, the National Rehabilitation Information Center at Catholic University and the University Center for International Rehabilitation at Michigan State. The computer network will permit persons at each site to "talk" to each other electronically; and thus share information amongst themselves without all having to be "on-line" at the same time.

*USES

a. **Administrative** – Human service agencies will be able to hold regular staff meetings, policy sessions, or case staffing over the network – any event where agencies feel it would be of value to exchange information among geographically dispursed persons.

(Over)

b. **Training** – An ideal use of the network will be to deliver education and training. Because of the "patch in" feature, instructors can be from outside the region – anywhere there is a telephone.

c. **Information Sharing** – Particularly with the computer conferencing function, an enormous amount of information will be available for use on local problems.

d. **Consumers** – While the primary users of Northern Network will be human service agencies, the network will provide an ideal vehicle for bringing consumers together.

***EVALUATION**

Evaluation activities will be split between internal assessments of costs and usage by Northern Network itself, and external research on organizational and policy impact by the Institute for the Future in Menlo Park, California.

***FUTURE**

The concept of the Northern Network is of a telecommunications cooperative. After an initial period of no cost usage, human service agencies will be requested to cost share the system. By September, 1981, it is hoped that the network will be entirely self-supporting.

***STAFF**

Robert Threlkeld – Project Director
Pamela Pease – Operations Coordinator
Linda MacNair – Research Aide

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(207)780-4430

Northern Network

SITE LOCATIONS

• AUDIO CONFERENCING

◉ COMPUTER CONFERENCING

A35

SECTION H

Glossary

GLOSSARY OF TERMS

***Agenda:** The written outline of the meeting goals and objectives to be discussed or resolved through teleconferencing.

Amplified Telephone: The general term for a "hands-free" telephone, consisting of a loudspeaker and microphone unit rather than a telephone handset.

Audio Conferencing: Group voice communication relying on voice exchanges among more than two participants. Microphones and loudspeakers can replace telephone handsets so that groups of people in one or more single rooms can be involved.

Bridge: A term used to describe the equipment which links three or more lines, usually, via telephone circuits.

***Circuit:** Communications path connecting telephones.

***Codes:** Network two-digit telephone number particular to each location.

Computer Conferencing: Group communication through a computer. Such "conferences" may involve simultaneous communication or "asynchronous" meetings that allow participants to enter the conference at random times. Computer conferencing systems are normally not complicated to use and should not require special computer expertise. Typically, any standard computer terminal may be used.

Terms and definitions without asterisks are based on Johansen, R., McNulty, M. and McNeal, B., **Electronics Education: Using Teleconferencing in Postsecondary Organizations**, Institute for the Future, Menlo Park, California, August, 1978.

Conference Calls: Dial-up, operator-assisted phone calls between more than two individuals or groups, made using standard telephone lines.

***Contact Person:** Person identified at each site as coordinator and liaison with the Northern Network.

Darome Convener: DAROME is a company name; CONVENER is the brand name of an audio teleconferencing set developed by the Darome Company. The convener consists of a portable speaker and table microphones.

Dedicated Network: Special transmission circuits devoted to a specific application. Such "dedicated" networks usually provide higher quality service than using public networks.

Electronic Mail: A message system for sending information from one person to one or more others. It is a person-to-person medium, rather than a group communication medium such as computer conferencing. Electronic mail systems typically exist as programs on computer networks; indeed, they are sometimes referred to as "computer mail."

Four-Wire Circuit: A four-wire circuit usually avoids some of the electrical echo problems associated with the normal (i.e., "two-wire") telephone network. A four-wire circuit allows two or more locations to talk and be heard simultaneously, thereby giving a greater sense of presence. See "two-wire" circuit.

***Jack:** The point at which the Darome Convener is plugged into the Northern Network.

Interactive Telecommunications: Interactive telecommunications involves either two-way, person-to-person interaction *through* an electronic medium or, if there is no person-to-person interaction, user-initiated communication.

***Master Roster:** A list of participants and their corresponding geographic locations for teleconferences. This is mailed in advance to all participants.

*Media Mixes: Hybrid of two or more communication technologies.

*Meeting Leader: Person who is responsible for planning and moderating a teleconference through the Northern Network.

*Northern Network: A new communication network for human service agencies in northern New England, developed from the belief that both service providers and service users will benefit from greater access to the right information at the right time. In March 1980, HEW's Office Telecommunications Policy awarded an eighteen month grant to the Human Services Development Institute of the University of Maine to establish and test a multi-agency, multi-state audio and computer system.

*Northern Network Operator: The person at HSDI in Portland who electronically sets up and insures high technical quality teleconferences.

*SS-4 System: A dialing system developed by the telephone company which allows for any or all points on a network to be hooked together. In the Northern Network system, the SS-4 allows the joining of only those sites designated for a particular conference, permitting privacy from other sites.

*Telpak: Arrangement through which a telephone customer can order a group of intercity circuits between specific points and pay a flat fee per mile.

Teleconferencing: Small group communication through an electronic medium. This is often used as a shorthand term for a specific medium under study by a group, such as audio, video, or computer-based teleconferencing.

Transmission Line: The means by which a signal is sent and received. Transmission "line" is sometimes used to refer to a satellite or microwave link, as well as actual wires.

Two-Wire Circuit: A typical telephone transmission circuit. In some applications, a two-wire system is less preferable than a "four-wire" system because it

requires voice switching to avoid electrical echo and leakage. See four-wire circuit.

Video Conferencing: Audio plus full visual conferencing for a group of people. Typically, such systems provide room-to-room linkages, with live television (sometimes in color) and voice communication. Video conferencing is currently being tested in the United States, Japan, Australia, the United Kingdom, and other countries. Such systems have had only limited success to date and are very expensive.

Voice Switching: Electrical technique for opening an audio circuit only to the person who is currently speaking. Such a system allows only one person to speak at a time, often without the capability of being interrupted.

WATS Line: Wide Area Telecommunications Service. An in-WATS line allows anyone in a designated area (as small as a city and as large as the United States) to phone an 800 number and pay nothing for the call; costs are absorbed by the called party. Out-WATS lines are an economical way to handle large volumes of outgoing long distance traffic. In both forms of WATS, there is no charge per call, but the base rate is high; thus, heavy usage is necessary to justify the cost.

APPENDIX B

COMPUTER CONFERENCING
FINAL REPORT AND EVALUATION

By:

Dr. Valarie Lamont

COMPUTER CONFERENCING FINAL REPORT AND EVALUATION

INTRODUCTION

The intent of the Northern Network project was to establish both an audio conferencing and computer conferencing system in northern New England. Of the two technologies, the computer conferencing component was significantly more experimental. Indeed, it was felt that computer conferencing would serve an educational function as well as a very limited demonstration of the utility of computer conferencing. That is, the experience with this system would introduce people to the use of computers as communication systems in addition to being simply information retrieval and data processing systems.

The specific objective of the project was to link the Vocational Rehabilitation central offices in Maine, New Hampshire and Vermont to each other via computer conferencing. This objective was based on two needs. There appeared to be a need for interstate communication in specific areas of vocational rehabilitation, and also a need to assess the potential of a resource network that extended beyond the three central offices. These needs were confirmed in discussions with the Maine Bureau of Rehabilitation director.

STEPS IN THE IMPLEMENTATION PROCESS

On-line conferencing was preceeded by several steps ranging from the selection of the conferencing system to training users. These steps are briefly described not only to provide guidance in the replication of such experiments, but also to highlight problems which can delay or affect the outcome of the experiment.

A. Equipment

The technology necessary to implement conferencing consists of a computer conferencing system, a terminal, and communication lines to link the terminal to the computer. The Electronic Information Exchange System (EIES), located at the New Jersey Institute of Technology, was selected after examination of several conferencing systems. This particular system offers the greatest number of communication options, including private messaging, conferencing, and the ability to pose questions and receive answers in an Inquiry/Response mode. In addition, users can use a menu format, which branches from the general to specifics, or a command format to interact with the entire system. Finally, the protocols are not difficult to master.

The EIES system is compatible with a wide range of terminals which enabled the selection factors to be narrowed down to cost, reliability, and ease of use. The Texas Instruments 745 became the final selection for the

above mentioned factors. Also, the terminal is quite portable, permitting ease of use while traveling.

By far, the greatest problem concerned "ports," the cheap data telephone lines. The EIES system is accessed through Telenet, Inc., which provides dedicated lines to link the terminals to the computer. These lines, in turn, are accessed by calling a local number for the linkage. At the beginning of the project, Vermont and New Hampshire were scheduled to have ports installed, permitting a local call to be made for the computer link. However, negotiations concerning a port for Maine fluctuated. The end result was that Maine received no port, and thus, had to make a long distance telephone call to Boston for the nearest port. This presented an additional cost component to the project.

B. Accounts

Access to the EIES computer conferencing program is a relatively simple matter. Requests are made to the EIES administration specifying the number of individual accounts needed and the number of conferences to be established. Because of the small scale of the experiment, it was decided to give one account to each state rehabilitation central office and one to the project monitor. One account was held in reserve to be used by a resource organization if necessary.

C. Training

The secretaries in each of the three central offices were the first users to be trained. At the beginning of the experiment, no decision had been made about the topic areas in rehabilitation on which to conference. These topic areas would come from later discussions with the directors. Thus, the decision was made to first train a lead secretary in each office on accessing the system. Because account numbers were limited, the secretaries would be able to act as liaisons between several users in each office and the computer. It would also provide one person at each location who could demonstrate computer conferencing to interested persons.

The training sessions involved a minimum of two site visits to each location. The first session was designed to provide an overview of EIES. Between the first and second sessions, the secretaries experimented with the private messages and a conference was established where comments and problems could be entered. The second session involved a more in-depth session on advanced system techniques. A one-hour session was established on the audio conferencing system to discuss particular problems. While this session was successful in bringing forth problems, the secretaries would have preferred an opportunity to try out some of the new techniques during the audio conference. Additional training was provided on-line and a card (see

Appendix A) was designed for the users. This identified each step necessary to sign onto EIES and listed each person's identification number.

The secretaries were able to master the sign-on routine rather quickly. Uncertainties arose when either the computer was down or Telenet was not operating. In these instances, the secretaries were uncertain about the cause of the problem and speculated that the problem emanated from them. Telephone calls were able to address these concerns. Private messages on EIES were used for the majority of problem identifications. The nature of these difficulies lay in the distinction between sending private messages and inserting conference items. A short exchange took place between the project monitor and the secretaries on the content appropriate for private messages versus the information presented in conferences which was seen by all project members. An additional problem area was the introduction to advanced features on the system. Once a certain level of expertise has been achieved, users can learn advanced techniques which allow them to access and move from option to option rapidly. Private messaging was used to both introduce these features and assist in implementing them. The following messages give some flavor for this type of exchange.

1. M 7340 VT/VOC REHAB (693) 5/24/81 2:01 PM L:11

Val, sorry I should have put this on the last message I wrote you but I didn't think of it until I was just trying to get into the conferences. Once I get all the information out of one conference and want to go on to a different one, is there any way I can do this without having to type ++ to get me back to the original menu? That takes a long time because you have to wait for it to get through the second menu and then type ++ to get the original menu and then you have to wait for it to go through that one. Is there anything I can use in the second menu - the one that starts with get items and ends with set options - without going back to the original menu? Thankx again for your help. Michelle.

2. Michelle, CHIMO is a newspaper which is put out sporadically on EIES. To see the current issue, just type +CHIMO instead of selecting a menu option. If you are at the first menu and have the question INITIAL CHOICE? waiting for you, type +CHIMO instead of selecting a menu option. If you still cannot get the newspaper, let me know. As to your question about getting printouts more efficiently from conferences, yes, there is a quicker way. When you are at the first menu and are prompted by INITIAL CHOICE?, type the following: ++GWCI,454,693. This tells the computer to "Get waiting conference items from conferences 454 to 693 inclusive." Of course, you will get only those items from the two numbers in which you are a member, not all items waiting in all conferences between the two numbers. If there are no items waiting in a conference, then nothing will print out for that conference. This should make getting items easier for you. Val.

D. Selection of Topics for Conferencing

In February, 1981, an audio conference linked the state rehabilitation offices in Maine, New Hampshire and Vermont. The participants included the state rehabilitation directors, selected rehabilitation staff and Northern Network staff. The agenda for this conference was a discussion of appropriate topics for computer conferencing.

The participants agreed that three topic areas had the potential of being developed into conferences on EIES for the purpose of information exchange. These topic areas were:

1. Interstate Policy Issues
2. Special Devices for the Handicapped
3. Services for the Blind.

The state rehabilitation directors further agreed to identify one person from each state to assume responsibility for each conference. Once the appropriate individuals were identified, a second audio conference was held for the nine persons in the three topic areas. The intent of the second audio conference was to explain the concept of computer conferencing to the new participants; to further define topics in each conference; and to discuss who would access EIES in each office.

In addition to the three conferences established under the Northern Network project, each state was made a member of a fourth conference on EIES, C454, a conference on Devices for the Disabled. This conference was established for another EIES experiment independent of this project. It was felt that the C454 members would substantially increase the resource network of the Northern Network project participants.

In terms of information flow and EIES access, a final decision was made to use the trained secretaries as lead users in each office. The agreement with each state was

that the trained secretary would access the system twice a week, check all of the conferences and route the messages and conference items to the appropriate persons. All conference members were given the option of learning how to use the terminal themselves; only two persons did so.

Based on discussions during the audio conference, each computer conference was initialed with a conference item which outlined the intent of the conference and the topics proposed to open discussion and which introduced the members to each other. After this point, the conference members were encouraged to proceed by commenting on the first item.

E. Pre-Use Questionnaire

As a final activity prior to full-scale conferencing, a decision was made to design and send out a pre-use questionnaire to obtain base-line data from the participants (see Appendix B). The questions addressed the following areas:

1. Knowledge of other group members
2. Communications network
3. Background
4. Communication skills and facilities
5. Expectations for EIES

The following narrative summarizes the results of the questionnaire. The data is based on responses from eight out of nine individuals who returned the questionnaire.

Part I: Knowledge of Other Group Members

In computer conferencing, prior knowledge of other group members sometimes facilitates the interaction on the computer system. With this group, only one person did not know other conference members either professionally or socially. This was attributed to that person's recent appointment to the position. Others knew one or more members of their group professionally and socially. With the exception of the one person recently hired, all members had met the other members of their group in a face-to-face meeting.

Part II: Communications Network

In this section, individuals were asked to describe their current communication activities, including the time spent on each activity. Seven out of eight persons are program administrators in rehabilitation. Thus, the greatest portion of their time, at least 25%, is spent addressing administrative activities. In addition to this, a considerable amount of time is spent on the telephone, the average being 4.9 hours per day on in-state calls and 4.75 hours per day on out-of-state telephone calls. Further, these persons must communicate with a significant number of other persons in order to do their work. The responses ranged from 3 to 50 individual contacts on a dialy basis; the greatest number of contacts were with in-state persons as opposed to out-of-state persons.

With respect to out-of-state communications, the communication mode most frequently chosen was the telephone, followed by mail and then face-to-face meetings.

Part III: Background

Eight males and one female were involved in this user group. One-half (50%) fell into the 35-44 age category. All members were college graduates and one-half had graduate training.

Part IV: Communication Skills and Facilities

In a computer conferencing system, information is entered into the system via a terminal with a typewriter-like keyboard. Thus, while typing skills are not essential, they are helpful in the initial phases of conferencing activity. The conference members' typing skills ranged from none to good. One-half (50%) could "hunt and peck;" 25% had no typing skills; 12½% had "good" skills.

The other side to conferencing is reading the input from other members. For this project, all members had paper-print terminals such that output was printed immediately upon receipt. Six persons (75%) indicated a fast reading speed, while 2 (25%) indicated a slow reading speed. Members were also asked if they felt more persuasive when writing or speaking and 75% selected writing as a preferred mode.

As a general reaction to computers, members were asked to rate computers from wonderful to terrible. All members

rated computers either in the wonderful to neutral range.

With respect to experiences with computers, the majority, 75%, have requested computer programs to be written by others; however, none have ever used an electronic mail or computer conferencing system or a home/personal computer. Along these same lines, only two persons (25%) had ever used a computer terminal before. Of these, one person had used a terminal for information retrieval and data entry purposes, a second person had more experience, using the terminal for information retrieval, programming, packaged analysis programs, and data entry purposes.

Other users of the conferencing systems have been concerned about privacy on such systems. For this group, one-half (50%) indicated a concern about privacy, while the other half indicated no concern. Also, one-half were concerned about loss of daily paper work on such systems and half disagreed that this issue was a concern.

Part V: Current Expectations About EIES

Certainly, individuals come to use computer conferencing with a set of both positive and negative expectations about such systems. All members of this group had one session where EIES was demonstrated, so there was a rudimentary knowledge of system options. When asked which system features they anticipated as being most useful, they indicated private messaging and conferencing as being the most useful.

Each person had different expectations about how often

they would use the system: 30 minutes to one hour each week, 12.5%; once a month, 50%; and once a week, 27.5%. Three persons (37.5%) indicated that another person would type their input; two (25%) would employ a combination of themselves and another person.

As for incentives for using the system, two persons (25%) felt the system would have limited but some worth and another 25% felt that it would be useful in many respects. Another 25% felt that it would be useful to others but not them personally, finally, one person viewed the system as being useless but indicated its worth would depend on other factors and the final person reserved judgment.

The most frequently cited factors which would limit use included the following:

1. Inconvenient terminal location
2. Preference for telephone communication
3. System too cumbersome or difficult
4. Preference to face-to-face communication.

Perceptions of time required on EIES compared to conventional communication modes ranged from requiring less time (37.5%) to requiring more time (12.5%) to requiring the same amount of time as other modes (12.5%). The remainder had no opinion.

The last set of questions were open-ended, and addressed several topics, including communication patterns and future uses for the system.

In response to how EIES might affect communication or work patterns, some members felt that it might impact out-of-state meetings and phone calls. Others referred to an impact on research activities. When asked to cite disadvantages or negative consequences of participation, one person suggested it might increase tasks and new information requests. Another suggested that lack of interest might contribute to an anti-computer attitude.

Future uses of the system generated several comments: expansion of EIES for training. As to things which would make the system more useful, two persons suggested a face-to-face meeting prior to the actual conferencing. Other suggestions were, the development of an in-state capability, knowledge of information banks to access, better terminal location, and a typist.

CONFERENCING ACTIVITY

A. Rates

Some conferencing took place in March, but April was the month during which the three states were on-line at the same time. Keeping in mind that each state had four users for each account, the following activity took place in each conference:

CONFERENCE	NUMBER OF CONFERENCE ITEMS
691	6
692	12
693	5

NUMBER OF ITEMS AUTHORED BY CONFERENCE

USER	C691	C692	C696	C694	TOTAL
860 Monitor	1	1	2	-	4
691 New Hampshire	2	2	1	-	5
692 Maine	1	4	-	1	6
693 Vermont	-	1	2	1	4

Several factors affected the low activity rates. The momentum which started in April and May declined through the summer months due to vacations. Because each conference had only three members, vacation time would greatly dampen activities. In addition, New Hampshire was without a terminal for almost one and one-half months. Again, this decreased the incentive for continuous activity. When there are only two members in a conference, it is far easier to use the telephone than a computer for information exchange. Finally, the critical mass necessary to keep the conferences moving was not there.

B. Content

The intent of conferencing was to provide a means for dialogue over a period of time without the requirement that participants be in the same place at the same time. The type of items entered into the conferences were questions with relatively short, concise answers, rather than a dialogue:

C692 CC4 TOM LONGFELLOW (692) 3/19/81 PM L:9 TO: 454

We in the Maine Bureau of Rehab are in the process of developing policy regarding payment of fees in facilities when clients are absent from the facility, thus, not receiving services of a day or more.

We have not been able to find any federal regulations regarding this. If you have a state policy or know of any other state that deals with this question, we would appreciate your responses. Thank you. Tom Longfellow (692).

C692 CC9 TOM LONGFELLOW (692) 4/8/81 4:50 PM L:57 TO: BOB KENNEDY

In response to your request for info on our CRP: I am currently responsible for the CRP.

Presently, the Maine Bureau of Rehabilitaiton case review process is taking place at the administrative level.

1. Thirty (30) cases (6 per region) are reviewed each month to determine the quality of casework and caseload management.

2. Statistical data provided by our MICS system is also systematically reviewed and tabulated on an individual counselor basis. The Bureau's Supervisor of Operations (Ron Hanson) visits each regional office on a monthly basis, discussing specific client cases that are beyond specified time limits in status, with regional directors. They, in turn, direct counselors to take some action in each case. This system has brought about a necessary update of caseloads, and should maintain their currency in the future.

> In addition to the above, a committee was established in early 1980 made up of two rehabilitation consultants, a regional director, and two supervisors, and given the responsibility of reviewing the service delivery system in relation to casework.
>
> A field test involving six counselors and three secretaries, has been underway for four months. A decision to expand or discontinue the test will be made by May 1, 1981. Presently, it is not feasible to consider statewide implementation because indoctrination and training must be planned first.
>
> A satisfactory system cannot be fully developed until refinements are made in the field test procedures. If possible, we plan to incorporate the review process with the Worcester Instrument in June, 2982 - wrong, in the year 2982 - O dear, I guess we are looking way into future, again - we plan to incorporate the Worcester Instrument in June, 1981!! Is there anything additional you feel we can elaborate on about the CRP?
>
> In regards to your CRP, we would be interested in your approach. Thanks, Tom.

The EIES system does provide a format for this type of information exchange, called Inquiry/Response. This format provides users with a resource network that extends beyond their immediate project group. The secretaries were instructed in the use of this format on EIES. The last month of EIES usage was August, and secretaries were encouraged to shift focus to Inquiry/Response for this last month. However, by this time users were discouraged about the lack of responses in the conferences and no queries were entered.

In retrospect, it appeared that several problems affected this experiment. First, there were too few people participating in each conference to make the activity worthwhile. Second, more time should have been allotted to experiment with Inquiry/Response. Third, each user should have had

their own account number. This would have eliminated problems with private messaging and would have reduced the considerable responsibility placed on each secretary to keep track of four conferences and all private messages.

To test out the validity of these conclusions, a decision was made to do a post-use evaluation, using the interview method. This evaluation is described in the next section.

EVALUATION

Two audio conferences were held at the end of this project. The first was designed to discuss EIES with the three lead secretaries. It was felt that these people could not only provide feedback on the mechanics of the system, but could also help to brainstorm about future uses of this system from their perspective as information gatekeepers. The second audio conference was held with the participants from each conference. The intent here was to obtain feedback on the usefulness of such systems and to explore other types of applications. An interview schedule was designed for each audio conference and can be found in Appendices C and D in this section.

A. Audio Conference with Secretaries

Each of the secretaries enjoyed private messaging over all other features on the system. Messaging provided immediate response, whereas conference items did not always generate a response. As to the least liked feature, this was the lack of response to conference items and infrequent use. Conferees didn't answer questions from others, and didn't use the system.

When asked about how comfortable they felt using the system, two gave a rating of two (comfortable) and one rated it three (neutral). This last rating was due to infrequent use. In terms of complexity, two gave a rating of four (simple) and one gave a three (neutral). Again, the comment on the latter score was that the secretary was not on often enough.

The secretaries all felt that there were no problems related to their function as gatekeepers, i.e., checking the system and routing information to the appropriate person. However, one secretary mentioned that more follow-up with conference members might have been useful. This type of follow-up would have included assurance that the information was received and checked for response requirement. Another comment was that the system should have been checked three or more times a week versus the one or two times required.

All felt that the amount of training was "just right." In fact, the secretaries were able to demonstrate the system to other interested persons. They also felt that the ability to send private messages about problems complemented the training process. They further did not feel that any changes were necessary in the training system, but would have liked more time to be trained in the advanced features or shortcuts on the system.

Finally, the secretaries were asked how systems such as this might be used in their own office work. Several suggestions were made. First, was the idea that conferencing systems could be used for intrastate communication. In this case, a central office would be linked to its regional offices within the state for a variety of purposes, i.e., policy statements, memos, feedback on issues. A second suggestion was that while directors did not have

much time for this activity, consultants and counselors could use the system for intrastate information exchange. Also, professionals could use the system for research purposes, eliminating the same letter to many states. Two secretaries recommended the system training purposes for both in-state and out-of-state training. Finally, the suggestion was made that the system would be an appropriate vehicle to discuss policy questions in a conference mode.

B. Audio Conference with Administrators

The computer conferencing participants consisted of nine individuals who served in a variety of capacities in their departments: assistant directors, program directors, and one consultant. Of these nine persons, seven participated in this audio conference.

As described previously, the limited number of EIES accounts limited this group's participation to the conferences use, messaging, and Inquiry/Response. In addition, only two members of the group learned to use EIES themselves and both were successful at this endeavor. Both gave a rating of one (very comfortable) with respect to their use of the system. As to complexity, one rated EIES five (very simple) and the other three rated it neutral. The comment on the last rating was that the user manual was frequently used, making it difficult to rate complexity.

Several of the questionnaire items did not elicit responses because of the limited nature of the participation.

The following paragraphs reflect discussion of those items relevant to this group.

The group was queried about the advantages and disadvantages of using secretaries as the gatekeepers for EIES. One problem stemmed from the batch mode of receiving printouts. Apparently, conference items and messages were accumulated and then presented to people in one office. This resulted in an information overload. In another office, the gatekeeper left for a period of time due to a pregnancy, and no one had been trained to replace her. This, and the lack of a terminal for a period of time, led to participation gaps. There seemed to be some problems in getting the right information to the appropriate persons. The general discussion seemed to reflect the need for better information flow in each office.

Several factors were cited as reasons for decreased system use. The most frequently mentioned was a time problem. Several persons indicated that the attention this system required tied up their time as well as the secretary's time. Further, when questions were posed, time was required to respond to the questions. This was considered to be a task in addition to their own activities. Another problem was the lack of responses to questions or comments. Several persons simply stopped entering items when the other conference participants did not respond. Finally, there is a need for more resource persons or other state offices to make participation worthwhile.

The last portion of the audio conference was spent exploring future uses of the system. Several persons commented that the experiment was a valid exercise but needed many more states to make this activity useful. Another suggestion was that the evaluation units in these offices would be more appropriate locations to house the system. This unit would tend to generate more questions on an interstate basis than other units and would also be better equipped to respond to inquiries. Specific areas which might benefit from such exchanges would be state laws, i.e., Workmen's Compensation. Another comment was that the Inquiry/Response mode on EIES should be investigated further as an alternative to the conferencing mode for certain groups. Finally, the group felt that one area which needed investigation was the use of conferencing systems for intrastate communications. Such systems could be used to link central offices with regional offices and not only permit an efficient flow of information out but also encourage feedback in a timely manner.

SUMMARY

In retrospect, the major problem with this experiment was the lack of a critical mass for each of the conferences. People simply needed other people to communicate with. Further, they needed to be able to talk with people they do not normally interact with in order to increase their informational resource base. In addition, due to the lack of individual accounts, participants did not have the flexibility to really explore EIES to tap its many potentials. Finally, greater attention should be paid to information flow patterns when there is one gatekeeper for several persons. This type of system can be very efficient, if time is spent on how information flows from the gatekeeper to the recipients and the frequency with which this occurs.

Given these major constraints, the experience did not discourage this group from thinking about future applications. The potential for intrastate communications emerged from both the secretaries and the conference members. Given the need for more immediate feedback on policy issues, the need for more efficient means to disseminate information and the need to reduce travel and downtime, this application would seem to merit further exploration. Further, there is still a need for interstate information exchange. However, the specific areas in rehabilitation which would benefit from such exchanges need documentation and description in order to make the best use of computer conferencing.

APPENDIX A

SIGN-ON

1. Plug in terminal cord into any electrical outlet. The terminal cord has 3 prongs; older outlets may require a 3 prong jack to accommodate the terminal.
2. Check to make sure the terminal cord is secure in the terminal outlet.
3. Terminal must be positioned near a telephone so that the telephone receiver can be placed in the rubber couplers on the terminal (modems).
4. Turn terminal "ON." The "ON-OFF" switch is located to the right of the right modem.
5. Dial your TELENET number: _____. Listen for a high-tone pitch. When you hear it, place the telephone receiver in the rubber couplers; cord end should be on the left.
6. On the terminal panel, lower right, there is a green light. When this light comes on, you are ready to proceed.
7. PRESS: CR;CR. The following words will appear: TELENET (then a series of numbers).
8. Then the following:
   Terminal = PRESS: CR
   TYPE: HALF
   TYPE: C(space)201
   (space)25C
9. The system should now tell you: 201 25C CONNECTED... and you can proceed to EIES Menu.

SPECIAL OPTIONS

INQUIRY/RESPONSE

1. At any question mark (?) point in EIES: TYPE: +TOPICS. For example, at the end of the first EIES Menu, "INITIAL CHOICE?" appears. You can type "+TOPICS at this point. Also, if you are in Scratchpad, you can type +TOPICS after any line prompt:

   2? +TOPICS

2. Then the following appears:

   EXCHANGE? TYPE: PT

OTHER INFORMATION

CORE GROUP

Richard Hill, Vermont (693)
Bob Kennedy, New Hampshire (691)
Valarie Lamont, HSDI (869)
Tom Longfellow, Maine (692)
Bob Threlkeld, HSDI (690)

CONFERENCES

Everyone is in C869 which deals with logistics.

ON-LINE HELP

Message Valarie Lamont (869) or call:

Office: (207)780-4458
Home: (207)773-0005

APPENDIX B

PRE-USE QUESTIONNAIRE

Your cooperation in completing the following questionnaire, before you begin extensive participation in the EIES system, will serve to provide a thorough and proper evaluation. The questions are designed to collect some information on your general background, your communication skills and style, your access to the conferencing system and your predisposition concerning its use. Another evaluation questionnaire will be sent to you towards the completion of this project.

Your Name _____

EIES Group Name/# _____

Job Title _____

Your Employer

City _____ State _____

Part I. Your EIES Group's Specialty (Group # _____)

1. Approximately how many members are in your EIES User Group? _____

2. How many members of your EIES User Group do you know professionally? _____

3. How many members of your EIES User Group do you know personally? _____

4. How many members of your EIES User Group have you met face-to-face? _____

Part II. Communication network

1. During an average week, approximately how many hours do you spend on each of the following kinds of activities?

	Total
Education	
teaching	
learning: reading books or journals	
attending meetings, seminars, etc.	
Administrative and support activities (committee meetings, memos, etc.)	
Telephone	
inside your organization	
outside your organization	
Consulting	
Funding (grants applications or other resource acquisition activities)	
Other professional activities (please specify)	
Total	_____

2. To do your work on a daily basis, approximately how many people do you need to communicate with? _____ (total)

   a. Number of individuals in-state? _____ (total)
   b. Number of individuals out-of-state? _____ (total)

3. How do you normally interact with individuals from out-of-state?

Communication Medium	Frequency (times per week)
Telephone (one to one)	_____
Mail	_____
Face-to-face	_____
Telephone conferencing	_____

Part III. Background Items

1. What is your age?

(1) _____ under 25
(2) _____ 25 - 34
(3) _____ 35 - 44
(4) _____ 45 - 54
(5) _____ 55 - 64
(6) _____ 65 & over

2. Sex: (1) _____ female (2) _____ male

3. Please list your academic degrees (Degree, Subject, Institution, and year).

Part IV. Communication Skills and Facilities

1. How would you describe your English reading speed?

(1) _____ Very fast
(2) _____ Fast
(3) _____ Slow
(4) _____ Very slow

2. Comparing your writing skills and your speaking skills, would you say you were more persuasive when:

(1) _____ Writing (2) _____ Speaking

3. How would you describe your typing skills?

(1) _____ None
(2) _____ Hunt and peck
(3) _____ Casual (rough draft with errors)
(4) _____ Good (can do 25 w.p.m. error free)
(5) _____ Excellent (can do 40 w.p.m. error free)

4. I think computers are:

: 1 : 2 : 3 : 4 : 5 : 6 : 7 :
Wonderful Neutral Terrible

5. Have you requested computer programs to be written by someone other than yourself?

(1) _____ Yes (2) _____ No

6. Have you ever utilized a computerized message system, teleconferencing or computerized conferencing system other than EIES?

(1) _____Yes (2) _____ No

(If yes, please indicate below which systems you have used.)

7. Have you ever used computer terminals before? (1) ___Yes (2)___No

7a. If yes, how often have you used terminals for:

	Never (1)	Occasionally (2)	Frequently (3)
Word Processing			
Information retrieval			
Programming			
Packaged analysis programs			
Data entry			
Game playing			
Other (Specify)			

8. Have you ever worked with a home or personal computer?

(1) ____ Yes (2) ____ No

9. I am concerned about the privacy of my messages over a computer conferencing system.

_____Strongly agree

_____Agree

_____Disagree

_____Strongly disagree

10. If my daily paper work were stored on a computer, I would be concerned about losing it electronically.

_____Strongly agree

_____Agree

_____Disagree

_____Strongly disagree

Part V. Current Expectations about the EIES

1. Which features of the Conferencing System do you anticipate as being most useful to you? (Please rank multiple selections 1,2,3, etc. where 1 is most useful)

(1) _____ Private messages between individuals
(2) _____ Group discussion and conferencing
(3) _____ Text editing features
(4) _____ Personal notebooks
(5) _____ Searching the conference records
(6) _____ Use of anonymous comments or pen names
(7) _____ Other (Specify) _____

2. How much time in the average week do you foresee yourself using the EIES?

(1) _____ 30 minutes or less
(2) _____ 30 minutes to 1 hour
(3) _____ 1 - 3 hours
(4) _____ 3 - 6 hours
(5) _____ 6 - 9 hours
(6) _____ 9 hours or more

3. How often do you foresee yourself signing on the system to send or receive messages or discussion comments?

(1) _____ Once a month
(2) _____ 2 - 3 times a month
(3) _____ Once a week
(4) _____ Two or three times a week
(5) _____ Daily
(6) _____ Several times a day

4. Do you anticipate entering the material into the System <u>yourself</u> or having someone else do it for you?

(1) _____ Type myself
(2) _____ Have it typed
(3) _____ Both will occur

5. Which statement best describes your incentive for using the system?

(1) _____ I am required to use it
(2) _____ I have been requested to use it
(3) _____ I am free to use it as I wish

6. Which of the following best describes your anticipation of the system's worth? (Please check only one)

(1)_____ I think it will be useless
(2)_____ I think it is useful for others, but not for me
(3)_____ I am skeptical about it but willing to try it
(4)_____ I am basically indifferent or neutral
(5)_____ I think it will have limited, but some worth for me
(6)_____ I think it will be useful in many respects
(7)_____ I think it will revolutionize my work/ communication process
(8)_____ It depends (Specify) _____

7. Which of the following do you feel will limit your probable use of the system? (If more than one applies, rank them 1,2,3, etc.)

(1)_____ Inconvenient terminal location
(2)_____ Preference for face-to-face communication
(3)_____ Preference for telephone communication
(4)_____ The people I wish to communicate with are not on the system
(5)_____ Typing skill or lack of a typist
(6)_____ Not enough time
(7)_____ System too cumbersome or difficult
(8)_____ General dislike for computers
(9)_____ Prefer drafting by longhand or dictation
(10)_____ Other (Specify) _____

8. Compared to the conventional means of communicating with your group, do you expect the EIES to:

(1)_____ Require less of your time
(2)_____ Require more of your time
(3)_____ Require the same amount of time

9. How do you think use of EIES will change your communications or work patterns? (Please be specific. What current activities would it replace?)

10. What disadvantage or negative consequences might possibly flow from your group's use of the system?

11. What suggestions do you have for the future use of this system?

12. What would make this system most useful to you?

APPENDIX C

EIES

POST-USE QUESTIONNAIRE

Secretaries

1. What did you enjoy most on EIES?

2. What did you enjoy doing least on EIES?

3. How comfortable did you feel using the EIES system, i.e., in terms of signing on, checking messages and conferences and signing off?

Very Comfortable	Comfortable	Neutral	Uncomfortable	Very Uncomfortable
1	2	3	4	5

4. How would you rate EIES in terms of complexity of the system?

Very Complex	Complex	Neutral	Simple	Very Simple
1	2	3	4	5

5. Your responsibilities as gatekeepers of the information involved checking for information, routing it to the appropriate person, and entering information. Were there any specific problems along the way?

6. With respect to training, did you:

Need more Training	Just Right	Need less Training
1	2	3

7. Were there things you thought should have been done differently with the training?

8. Did you, as secretaries, see any uses for this type of communication for your own work?

In-state:

Out-of-state:

APPENDIX D

POST-USE QUESTIONNAIRE

Conference Members

1. Which features of EIES did you find most useful to you?

   _____ a. Private message
   _____ b. Conferencing

2. Several of you used the secretary as a liaison between yourself and the computer system. Did you find this system efficient?

3. For those who used the terminal directly, how confortable did you feel using the system, i.e., in terms of signing on, checking messages, and conferences, and signing off?

Very Comfortable	Comfortable	Neutral	Uncomfortable	Very Uncomfortable
1	2	3	4	5

4. How would you rate EIES in terms of complexity of the system?

Very Complex	Complex	Neutral	Simple	Very Simple
1	2	3	4	5

5. What did you enjoy most on EIES?

6. What was the most difficult task on EIES?

7. What factors/problems led to decreased use of the system?

8. What would you have done differently?

9. Suggestions for future use of system?

APPENDIX C

THE DEVELOPMENT OF AN AUDIO CONFERENCING SYSTEM FOR THE MAINE BUREAU OF REHABILITATION AND ASSESSMENT OF THE INTERACTION PATTERN OF A SINGLE REGULAR USER GROUP

By:

Pamela S. Pease

INTRODUCTION

While for a number of years there has been an active research effort in teleconferencing, news of technological advancements moves slowly into the government sector, particularly to locations away from the intellectual arteries of this culture, places like Maine. However, one small teleconferencing project did emerge in Maine in 1979, and the purpose of this paper is to consider several elements of that effort. Specifically the objectives are:

a. to examine the development of the network against suggestions given in the literature;
b. review the operating structure and usage patterns in relationship to the literature; and
c. to examine a number of behavioral indicators from tapes of a stable group of users which teleconferenced weekly over a several month period, to ascertain if increased usage changed behavior.

Hopefully, the paper will contribute to the rapidly growing literature related of field-generated teleconferencing systems.

ESTABLISHING THE NETWORK

While both Stockbridge (1980) and Fowler and Wacherbarth (1980) suggest that 25-50% of meetings could be replaced by teleconference, Carey (undated, a) noted that this global need statement must be refined to be of use. He poses four questions. Who recognizes the need? Do users want to meet the need? How does telecommunications fit into the scheme of submerged needs of users? What is the payoff for persons who are involved in implementation?

The Maine Bureau of Rehabilitation telecommunications project came about from a need perceived by the top level of the agency's administration, the director. He contacted the University of Southern Maine and requested that a four-wire audio-only conferencing system be established in each of twelve offices around the state. Darome equipment was wired into an existing nursing education teleconferencing circuit. Three hours per week were available to users, primarily for administrative purposes. The system was grafted onto the agency's operations, without extensive user involvement in the immediate beginning.

In response to Carey's questions, the need was primarily recognized by the agency director, who himself later used the network regularly. Other potential system users, however, were reluctant and even hostile to the network, violating

Carey's caveat about the risks of introducing a system at a time of low morale.

However, several of the requirements which Carey discussed were met. Equipment was located in either conference rooms or supervisors' offices. Minimal physical distance was involved, the equipment was located on the agency's own turf, and was close to the users' traffic pattern.

Also, the audio-only system using Darome instruments meant that there was no video component and, therefore, less chance for psychological discomfort; plus the simplicity of the system meant greater ease of usage and almost no equipment failure.

While the users themselves were not part of the initial decision to install the system, they were brought along as soon as the contracted activities began. The writer spent the bulk of her work for nine months in close contact with users. Her tasks fell into three major classes:

a. one-on-one interviewing to develop potential teleconferences prior to installation of the equipment;
b. training new leaders and participants in planning and holding teleconferences, and using the end instruments; and
c. establishing and maintaining a meeting schedule and agenda distribution system.

Therefore, although users had no real choice about the basic parameters of the system (audio-only, three hours per week, push-to-talk devices); they were heavily involved once the decision had been made to implement the system.

During the nine month period, eighty-five one-hour conferences were held. About a third were held between five administrators in region headquarters throughout Maine. This user group evolved from being totally inexperienced with audio teleconferencing, to becoming extremely comfortable with the medium of information exchange.

While a good deal of research has been performed to assess costs of teleconferencing, acceptability, types of information exchange and differential effectiveness with other meetings (Champness, 1973; Johansen, Vallee and Spangler, 1979; Fowler and Wackenbarth, 1980; Elton and Pye 1973; Gold, 1979) Carey (undated, b) recently studied the teleconference from a different perspective which he stated, "...asks a seemingly naive question: what is happening in a teleconference?" The present research parallels Carey's in spirit if not in complexity. Carey studied thirty teleconferences with nine user groups in a New York University-sponsored research project in Vermont. The Vermont project held audio teleconferences by bridging together regular commercial lines. While the end instruments were not specified in Carey's paper, this writer assumes that standard

telephones or voice activated speakerphones were used. Carey's measures were quite fine-grained, following Goffman's (1974) work on "frame analysis."

REGIONAL DIRECTOR TELECONFERENCE STRUCTURE

Each meeting which will be subsequently analyzed followed a consistent pattern in planning and execution. The core constituency was made up of five regional directors and their central office administrator. Over the months, occasional additional participants were involved, or one of the regional directors was absent.

The meeting was planned by the present writer working with the designated leader to create an agenda (see attachment). Leadership shifted in a regular fashion from regional director to regional director, because the writer felt this procedure might democratize the meeting. The agenda structure was fairly consistent over time. Opening announcements were given by the central office administrator, and these were followed by discussion of topics which had been previously chosen by the regional directors themselves. Often the person suggesting the item led the discussion.

Since the network was a totally open circuit, a meeting began by participants turning up the volume on their conferencing equipment. The writer, functioning in her coordinating role, simply checked to see if the designated

leader was on the network, then told the leader to proceed. After a roll call, the meeting began. Meetings lasted approximately one hour. Since the network was leased from another organization, running overtime could have interfered with other teleconferences.

The present research assesses several behavioral factors in regional director teleconferences and poses the following central research question: Do planning and teleconferencing behavior by a stable group change over time from regular use of the medium?

PROCEDURE

All teleconferences during this demonstration were audio taped. The regional director group held thirty teleconferences, and of these meetings the first twelve and last twelve were analyzed forming the "early meeting" and "later meeting" samples, and establishing an N of 12 for each group.

Each meeting was analyzed in three ways. First, the agenda was reviewed. The total number of agenda items was tabulated as an indicator of good pre-planning. The number of participants was also noted, since this variable could have an impact both on other measurements and the interaction pattern.

Secondly, the first portion of each of the twenty-four meetings was analyzed. The first variable assessed the length of time involved in "climate-setting behavior", which

could roughly be defined as non-agenda related social questions such as "Did you run in the race in Camden last week?" Each meeting had this period of getting re-acquainted for some or all participants. The writer began her timing when a statement like "Hello, Ed, how's the weather..." was made, and terminated when the leader suggested the meeting should begin.

Another measure in this early portion of the meeting was "goal discussion", in which the leader referred to the agenda, describing it in detail and asking for comments or additions. The length of goal discussion was taken as a measure of the quality of pre-planning. From the content of the tapes, it was clear that the longer the discussion of goals ("What shall we talk about?") the less well planned the meeting.

Another measure of the initial portion of the meeting was the length of the opening statement by the meeting leader. After a roll call, climate-setting and goal discussion, the leader gave a monologue which consisted of announcements or explanations. The opening monologue often set the interaction pattern for the rest of the meeting, with long monologues discouraging active interaction. A final measure was whether or not during the initial period of the meeting, mention was made of any technical problems with the audio quality of the network.

The third element of analysis for each meeting was a

ten-minute segment at the mid-point of each meeting. Two measures were taken. The total number of persons who made a substantive comment (more than a simple affirmation such as "O'Kay") was tabulated. This concept is different from Carey's (undated, b) "gross speaking turns" which included any utterances by any participant, and was a measure of interaction. The measure used in the present study was one primarily of participation. How many people were verbally involved? A second measure taken during the mid-segment was total time in which there was "dead air" or no one speaking. The writer began timing this variable after any three-second pause, since this three-second lag is frequent in normal conversation and not indicative of any disruption in communication. The writer assumed that longer pauses were awkward and uncomfortable and signified an impediment in the smooth flow of information, a negative element in the teleconference.

RESULTS

Means and standard deviations were computed for each variable for the twelve meetings in both the earlier and later category. A simple t-test was performed between the means. The t-test assumed that each variable was normally distributed throughout the thirty meetings and tested to see whether or not the differences between means was a random occurrance. Results are given below in Table 1.

TABLE I

COMPARISON OF EARLIER AND LATER MEETINGS

Variable	Early (N=12) Mean	SD	Later (N=12) Mean	SD	T-Value
1. Number of agenda items	5.33	0.47	3.66	0.47	8.34**
2. Number of Participants	7.83	2.11	5.83	0.89	2.89*
3. Climate-setting (minutes)	2.58	1.74	1.16	0.47	2.61*
4. Goal discussion (minutes)	5.0	2.08	4.0	1.73	1.23 n.s.
5. Opening monologue (minutes)	11.16	2.83	15.41	3.37	3.21**
6. Technical difficulties (# of meetings mentioned)	8		8		(1)
7. Number of individuals speaking in mid-segment	5.33	1.97	5.0	1.24	0.46 n.s.
8. Total amount of pauses in mid-segment (seconds)	58.33	24.26	25.0	9.12	t=4.26**

* P .05
** P .01
(1) no statistical analysis performed

The analysis suggests that several differences exist between earlier and later meetings. The number of participants and agenda items declined, as did time spent on climate-setting behavior at the beginning of a teleconference. The amount of pause time in the mid-segment of the teleconference also decreased between earlier and later meetings. The only significant increase noted was in the length of the initial monologue.

DISCUSSION

The variables measured in the present study assist in defining the probable form of regional director meetings. The meetings were of small groups. The pre-planning of the sessions declined over time, if one assumes that the decline in agenda items can be interpreted as less forethought. Good discussion appears to have been a significant element of each meeting (6-8%). Meetings had a central bulletin board category of one or more announcements or explanations which were delivered after the meetings goal discussion. The results also suggest that there were frequent technical difficulties with the system (66% of each measurement period). The content of the meetings, however, revealed to the writer that most of these difficulties were minor (i.e., "Speak up a little.")

These meetings also can be described as interactive;

not only in potential but in fact. Once the ritual opening activities occurred, most participants seemed to be actively verbally participating, as can be noted in the number of individuals speaking in the mid-segment. The drop in the pause time also suggests a group that grew comfortable with interrupting over time. The pause measure is somewhat enigmatic, however. It could be plausible that real comfort could have meant not worrying about "dead air", being comfortable with silence.

What can be said about the changes in teleconferencing style of this particular group of administrators? One interpretation from this data could be that the teleconcerences degraded over time. Participation fell, climate-setting declined, agendas became abbreviated, and monologues increased. The results could suggest a dying interest in the teleconferences. A second interpretation which this writer chooses to make is that over the nine-month period, that this group actually became comfortable with the equipment and medium, adopted it to their own meeting cultural norms, and "got down to business." Other research (Threlkeld and Pease, 1980) buttresses this interpretation, since positive feelings about teleconferencing increased over this period. In the research cited above, the variable most highly correlated with positive feelings about a meeting was the immediate usefulness of the information to the participants. Thus, this was a business tool, not an education or entertainment

system. It's aim was to transmit and discuss technical information (policies, budgets, personnel) in a rapid way. Threlkeld and Pease (1980) also make the point that interaction, while important to the users of the system, was much less important than the content of the meeting.

It is also interesting when one recognizes that much of the actual structure of the meetings violated suggestions made by Parker and Monson, 1980, as to structures necessary for effective conferencing. While initially trained in these techniques, this particular group of administrators discarded many of them over time. They appeared to prefer lengthy initial monologues to more contrived interactive approaches.

The development and implementation of this project, and this research view of one of its elements suggests that teleconferencing has had a positive value to the particular northeastern agency. The writer agrees with Stockbridge (1980) when he stated:

> "I am increasingly convinced that teleconferencing is a useful and economical service; the problems mainly concern reluctance to change, essentially minimizing behavioral and operational constraints... ... In an era of increasingly rapid change, of energy consciousnes and gasoline shortage, teleconferencing is no longer the wave of the future - its time has come." (Page 107).

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MAINE VOCATIONAL REHABILITATION
TELECOMMUNICATIONS PROJECT
AGENDA

Session Date: Nov. 4
Start: 9:00
End: 10:00

TITLE: REGIONAL DIRECTORS MEETING

LEADERS: Ron Hanson

MODERATORS: Robert Threlkeld or Pamela Pease

SPEAKERS: Michael Williams, Ph.D.
Doug Cowie
Steve Beam

AGENDA ITEM	PERSON/FORMAT	APPROX. TIME	NOTES
A. General Announcements	Hanson	7 min.	
B. Case Review Sampling 1. Overview 2. Discussion	Cowie	15 min.	
C. Regional Transportation 1. Overview 2. Discussion	Hanson/Beam	10 min.	
D. Graduate Counselor Education Program 1. Overview & Changes in the program 2. Future Directions of the program 3. Discussion	Williams/Handouts	15 min.	
E. Planning for Nov. 21st Meeting 1. Field suggestions 2. Discussion	Hanson	7 min.	
F. Wrap-up/Evaluation Forms	Hanson/Threlkeld	5 min.	

C14

C15

Master Roster

VR REGIONAL DIRECTORS MEETING

November 14, 1979

Augusta Central Office

Ron Hanson
Doug Cowie

H.S.D.I.

Steve Beam
Michael Williams

Region I - Portland

Edward Scott

Region II - Lewiston

David Fish

Region III - Augusta

Kate Brady

Region IV - Bangor

James Gorman

Region V - Caribou

James Barton

APPENDIX D

SAMPLE TELECONFERENCE

SAMPLE TELECONFERENCE

In order to understand one of the typical uses of the system, this section of the report will describe in detail one particular meeting. By examining the structure, process, and results of this meeting, readers will get a feel for audio teleconferencing as it was applied to the work needs of the Maine Bureau of Rehabilitation.

In mid-winter of 1979, the Bureau was faced with a serious financial problem. Because of an unexpected shortage of money, the agency was forced to take a long and searching look at its available cash and future commitments, then rapidly develop cost-cutting measures. This financial dilemma required that there be frequent and easy access between the agency's central and field offices.

Fortunately, the audio teleconferencing system had been functioning for several months and was immediately seized upon for help. The meeting selected was a regularly-scheduled supervisors' meeting, one of a series held during the winter. Because of the financial crisis, the bulk of the session was given over to talk of it.

The meeting agenda and content were produced by the Portland area supervisor working with the operations coordinator from HSDI. The operations coordinator placed

a series of telephone calls to the supervisor and discussed current areas of interest. The attached agenda was the outcome. Just prior to the actual meeting, it became clear that major decisions were being made regarding the agency's financial status. Therefore, the working agenda for the meeting was altered at the last minute, when the agency director chose to join the meeting to personally explain the situation.

The meeting began with the Portland supervisor, leader for this particular meeting, calling the roll, which consisted of supervisors or surrogates from Portland, Sanford, Lewiston, Rockland, Augusta, Bangor, Machias and Caribou. After some initial short greetings and informal questions ("Did you folks move your offices yet?"), the Portland supervisor gave general announcements. She suggested that written notes be taken at this and future meetings, since she was concerned that information discussed should be forwarded to administrators. She then made several short announcements, and turned the meeting over to the supervisor in Machias (200 miles away) to discuss the agenda item dealing with discrepancies in the financial computer printout. For about ten minutes the supervisors described errors in the financial reports they were receiving, and the possible impact on available funds.

The chair of the meeting then shifted to the supervisor in Rockland for a discussion of the item related

to actual spending versus the budget. He turned the meeting over to the director of the agency, who described the immediate financial situation. The director stated that the supervisors were to receive a memo the next day outlining steps needed to slow spending. He noted, however, that it might be clearer if he paraphrased the memo over the teleconferencing network and dealt with any questions which might arise.

For the next several minutes the director elaborated on the agency's money problems, with particular attention to how to provide equitable, if limited, services to all clients during the remainder of the year. During his presentation, he praised some suggestions previously made by the agency staff and outlined additional information needed from the local offices.

After his ten-minute statement, the director opened up the meeting to questions from the supervisors around the state. The following is a transcript of that portion of the meeting.

DIRECTOR: "...I think that's about all I have. I'd be willing to try to answer questions."

SUPERVISOR-ROCKLAND: "Yes Owen, I have a question regarding the Title II and Title XVI authorizations. Has that situation been addressed, and what sort of resolution has been made on that?"

DIRECTOR: "From our best information, there is no significant problem in either of those accounts at the present time. So, as I say, I don't see any great problem there right now."

SUPERVISOR-ROCKLAND: "Well, is the restriction on spending any funds at this time still on?"

DIRECTOR: "No, I think we have to lift that on those accounts."

SUPERVISOR-ROCKLAND: "O.K. Now I have another question regarding your statement about the possibility of taking some money back from these block fundings. What sort of a process is that and how much jeopardy would that place those facilities in?"

DIRECTOR: "Well, that's a very real question, you know, and one that to some extent we will have to work out with the facility..." (lengthy statement on funding and facilities)

SUPERVISOR-ROCKLAND: "Along that line, Owen, should we at this point be considering not sending anybody to these facilities, or should we continue as usual?"

DIRECTOR: "I think for the present time we can continue as usual, but I hope we will have a firm answer to this in a very short period of time."

SUPERVISOR-PORTLAND: "Owen, that Bureau of Mental Retardation - Vocational Rehabilitation money that we have... I'm not really sure how the accounting for that goes, but are we going to continue that service? We have some people involved, as you know, in the consent decree suit for which we are doing BR 20's as opposed to blocks."

DIRECTOR: "We will have to continue that. I feel we are obligated to do that."

SUPERVISOR-LEWISTON: "What kind of time frame are we talking about in terms of recapturing money that can be recaptured? And also, are we talking only about looking at Section 110 cases?"

DIRECTOR: "Ah, I think that if we are going to be looking, we should be requesting that all of the information that we are asking for be back here in this office by the 19th of March."

SUPERVISOR-LEWISTON: "Thank you."

DIRECTOR: "Are there any other questions?"

SUPERVISOR-LEWISTON: "Owen, we have some people who are at a facility who we are paying out of BR 20's over and above block and we haven't said anything to the facility yet, because we didn't know what to say to them. They are there this month and we haven't sent in the February ones either. What are we going to do with those?"

DIRECTOR: "To send in the authorizations for February, you mean?"

SUPERVISOR-LEWISTON: "Correct."

DIRECTOR: "That would provide services for February?"

SUPERVISOR-LEWISTON: "Yes."

DIRECTOR: "Well, I think we are sort of obligated if the client is in there to pay for February. I would hold off for any authorizations for any services in March until we get this data back in."

SECRETARY-MACHIAS: "Owen?"

DIRECTOR: "Yes?"

SECRETARY-MACHIAS: "This is Alta in Machias."

DIRECTOR: "Yes."

SECRETARY-MACHIAS: "If you are able to get money back from the facilities, would this be used to cover the balance that we are in the red?"

DIRECTOR: "Well, it would be used to provide whatever limited kinds of services that we are going to provide for the rest of the year, once that is determined."

SUPERVISOR-
ROCKLAND: "Owen, a question that might be of some concern to some people... Are there any positions in the Bureau at this time that are in jeopardy?"

DIRECTOR: "Well, there are no positions in jeopardy if you are, for example, speaking of lay-off's. Certainly, you have probably seen the information that has come out on replacements, or hiring new people. It's going to be very rigid. But in terms of lay-offs at the present time, I would say there's no great danger.

After this question-and-answer period, the director left the meeting and the supervisor in Portland polled the other supervisors as to their feelings about what to discuss next. The participants decided to listen to a brief presentation by a specialist from HSDI about current cooperative planning between Vocational Rehabilitation and the Department of Education.

A total of four meeting reaction forms were received from the participants of this meeting. While this was less than twenty-five percent, unfortunately it represents about the average rate of questionnaire return at this point in the project. Averages for the six questions are given below. Note that they are on a seven-point scale, with 7 = high.

1. Overall, how would you rate this meeting? (5.3)
2. How was the technical acceptability of the equipment? (6.8)
3. How useful was this meeting? (5.3)
4. How much interaction was there with the meeting leader? (5.75)
5. How interesting or boring did you find this meeting? (6.5)
6. How comfortable did you feel in speaking over the equipment? (6.3)

The bulk of the ratings and comments were positive, with statements like "useful info" and "we got some straight answers" penciled on the forms. One negative reaction was received. Low ratings were given to the meeting content and usefulness and the writer described it as being "less than definitive - more questions remain unanswered."

To most readers, this meeting probably appears boring and filled with unintelligible jargon. However, its value to the participants is apparent from the Meeting Reaction Form; and while the meeting appears to be simply a discussion between several people, it illustrates several aspects of good teleconferencing.

- All participants received an agenda in advance. Even though the precise agenda items were not followed, prior to the meeting persons had an understanding of what was to be discussed.
- Leadership rotated to various participants during the course of the meeting. Aside from making the meeting more interesting to listen to by having a variety of voices, the shared responsibility for leadership democratized the meeting process, leading to increased commitment for the success of the meeting.
- There was a high level of interaction among participants. Teleconferencing is an interactive medium, one of whose greatest assets is the ability of all participants to speak as well as listen. This ability for dialogue is

what separates the medium from regular radio, television, or written communication. This meeting showed the effectiveness of this two-way capability.

- High value information was exchanged. Teleconferencing is unfamiliar to users. To overcome resistance to usage, meetings which consider immediately-useful topics are preferable. The information in the meeting was used directly in decisions by the participants.
- Teleconferencing worked in conjunction with a second medium. In the actual script of the meeting, the director noted that he would paraphrase a memo he was sending to participants that day. Since memos are one-way communication, the substance of the written information can be expanded during the teleconference, and participants later have a written copy to which to refer.

APPENDIX E

EVALUATION MATERIALS

E1

UNIVERSITY OF SOUTHERN MAINE

A UNIT OF THE UNIVERSITY OF MAINE

Human Services Development Institute

246 Deering Avenue
Portland, Maine 04102
207/780-4430

Dear _____:

On _____ you led a _____ teleconference over Northern Network. As part of the Network's evaluation process, we would appreciate your answering the following questions and returning this form to us in the enclosed, postage-paid envelope. Thank you for your assistance.

Sincerely,

Robert M. Threlkeld, Ph.D.
Project Director

---

1. Do you consider the above meeting primarily to have been: (Check one)

   ☐ A. A *replacement* meeting for a face-to-face meeting? (Requiring fewer face-to-face meetings.)

   ☐ B. A meeting which *supplements* but does not replace any face-to-face meetings?

   ☐ C. An *original* type of meeting? (Bringing people together for a meeting which would not have been considered feasible without the teleconferencing system.)

   ☐ D. A *training* session? (To teach participants new concepts, new procedures, or skills.)

2. How frequently do you now meet face-to-face with this group? (Check one)

   ☐ A. weekly or more often
   ☐ B. twice a month
   ☐ C. monthly
   ☐ D. less than monthly
   ☐ E. never before

3. How would the bulk of the information in this meeting have been transmitted <u>without</u> the teleconferencing system? (Check one)

- A. traditional phone call to each participant
- B. telephone company arranged conference call over regular phones
- C. memo or letter
- D. informal word of mouth
- E. formal face-to-face meeting
- F. in-state face-to-face training session
- G. out-of-state face-to-face training session
- H. information wouldn't have been transmitted

4. In retrospect, please rate the following dimensions as to whether you feel teleconferencing or face-to-face meeting would have been superior for this particular meeting. (Place one "X" for each category)

	TELECON-FERENCING	NO DIFFERENCE	FACE-TO-FACE
1. Most information exchanged in allotted time			
2. Most friendly, warm, and personal			
3. Most democratic, high interaction between participants			
4. Your preference for the medium for this meeting			

MEETING REACTION FORM

Please fill out this form after each meeting and drop it in the collection container.

DATE _____ STARTING TIME OF TELECONFERENCE: _____

Were you the meeting leader? YES____ NO ____

PLEASE ANSWER THE FOLLOWING QUESTIONS (CIRCLE A SINGLE NUMBER PER QUESTION):

1.	Overall, how would you rate this meeting?	Very Poor	1	2	3	4	5	6	7	Very Good
2.	How was the audio quality?	Very Poor	1	2	3	4	5	6	7	Very Good
3.	How useful was the information exchanged at this meeting?	Not Useful	1	2	3	4	5	6	7	Very Useful
4.	How much interaction was there among participants?	Very Little	1	2	3	4	5	6	7	A great Deal
5.	How interesting or boring did you find the meeting?	Very Boring	1	2	3	4	5	6	7	Very Interesting

6. Suggestions? _____

_____

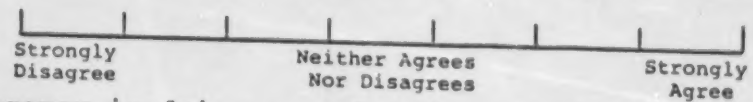
_____

E4

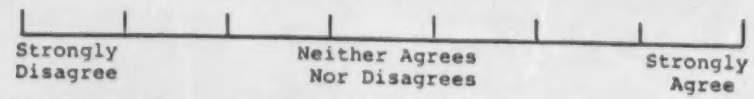
TELECONFERENCING REACTION FORM

As you know, the agency will install and use a telecommunications system in September. This form will be useful to the University of Southern Maine in evaluating its effect on the agency. Please complete it and drop it in the mail, using the attached envelope. One check in one box for each question.

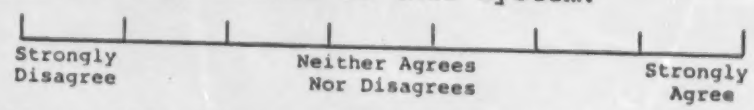
1. This new teleconferencing system will save us money.



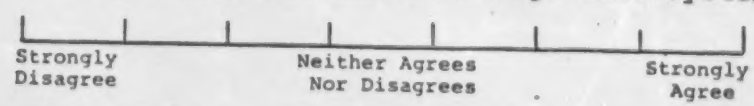
2. This agency is doing a good job.



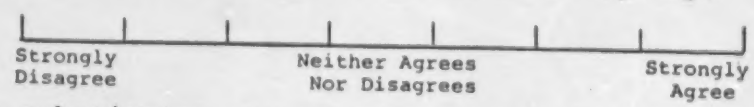
3. I am glad we have access to this system.



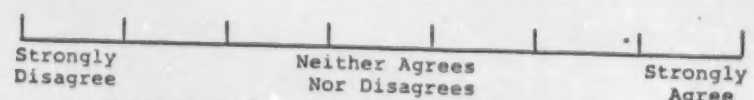
4. I think we will gain new ideas through this system.



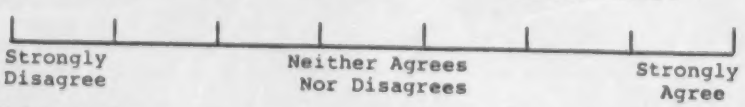
5. This system won't be useful to us as an agency.



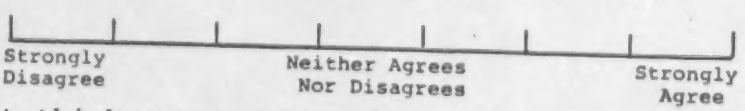
6. We can substitute many of our communications by using this system.



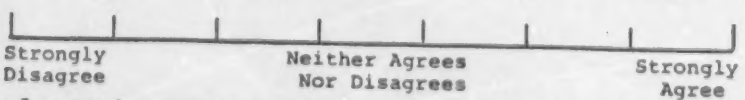
7. The agency administration here is accessible.



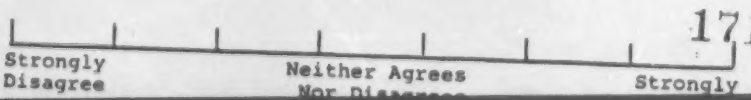
8. With this teleconferencing system, we will now be able to meet with people with whom we never could before.



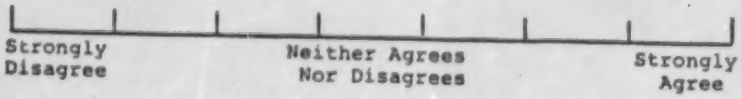
9. I don't think our travel costs will be cut by using this system.



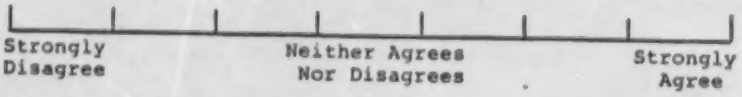
10. This teleconferencing system is a good idea.



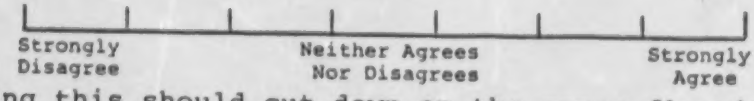
11. A lot of our phone calls and memos can be replaced by teleconferences.



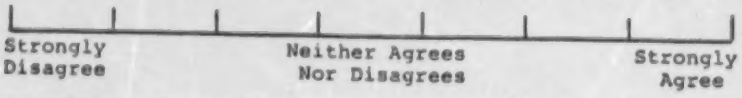
12. This system won't help provide us with any new information.



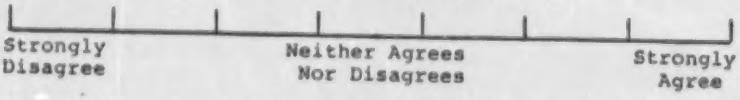
13. Morale in this agency is low.



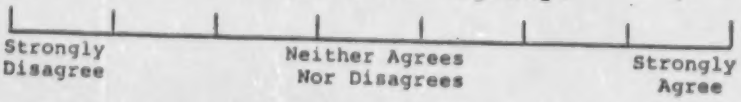
14. Using this should cut down on the paper flow in this agency.



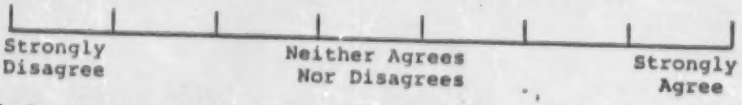
15. This teleconferencing system won't give us access to any new people and resources we don't already have.



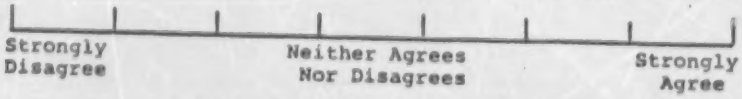
16. We aren't very cohesive as an agency.



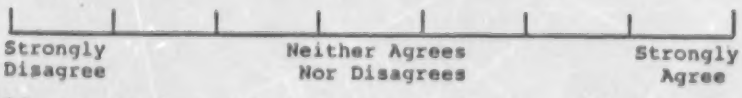
17. This system should cut staff travel time.



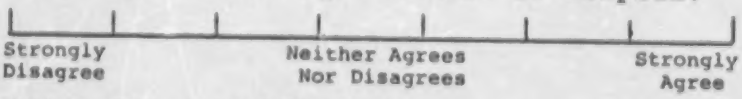
18. I think that many of our current meetings could be done by teleconference.



19. With gas prices the way they are, this system should be valuable to the agency.



20. Overall, I doubt this system will be helpful.



Job Classification (check one)

1. Administrator/Supervisor ▱
2. Direct Service Worker ▱
3. Secretary ▱

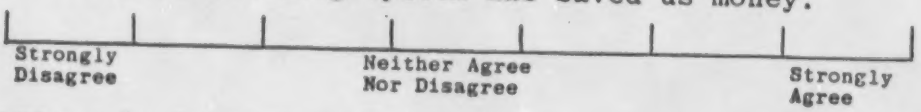
Age

1. 20 - 30 ▱
2. 30 - 40 ▱
3. 40 - 50 ▱
4. 50 - 60 ▱
5. 60 - 70 ▱

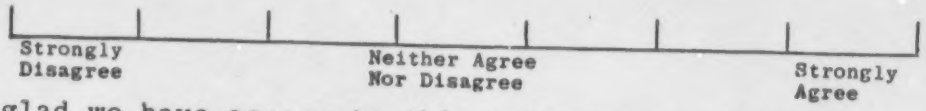
TELECONFERENCE REACTION FORM

As you know, the agency has installed and used a telecommunications system since December, 1980. This form will be useful to the University of Southern Maine in evaluating its effect on the agency. Please complete it and return it to your teleconferencing Contact Person in your office. One check in one box for each question. Thank you.

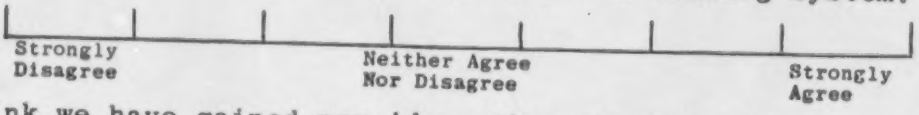
1. This new teleconferencing system has saved us money.



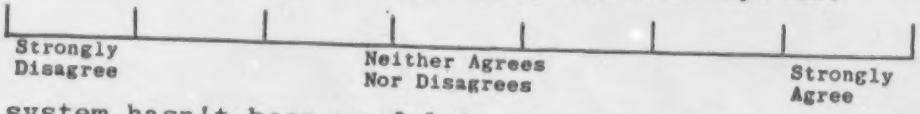
2. This agency is doing a good job.



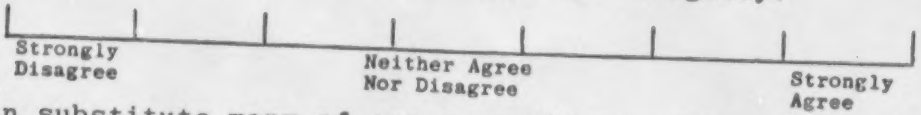
3. I am glad we have access to this teleconferencing system.



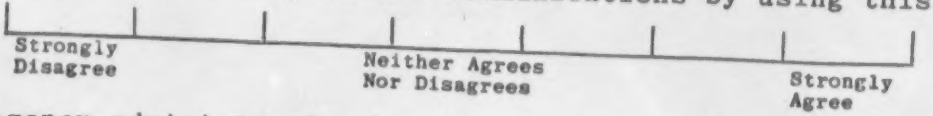
4. I think we have gained new ideas through this system.



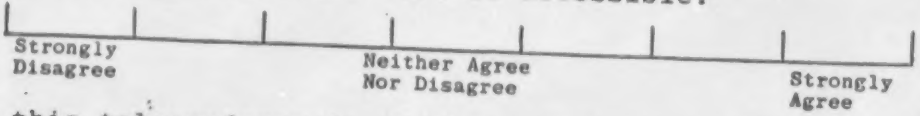
5. This system hasn't been useful to us as an agency.



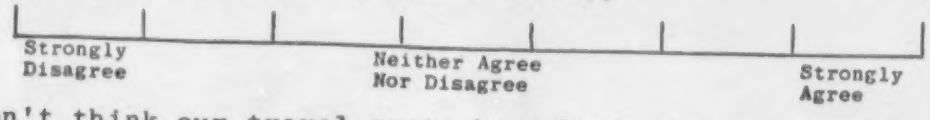
6. We can substitute many of our communications by using this system.



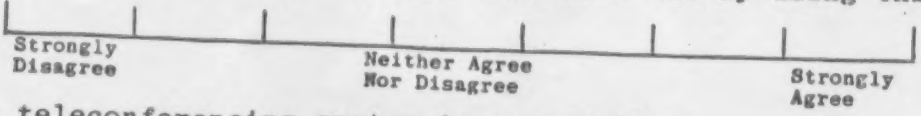
7. The agency administration here is accessible.



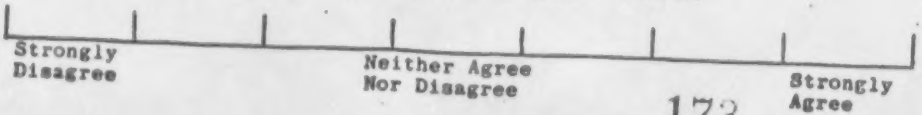
8. With this teleconferencing system, we are now able to meet with people with whom we never could before.



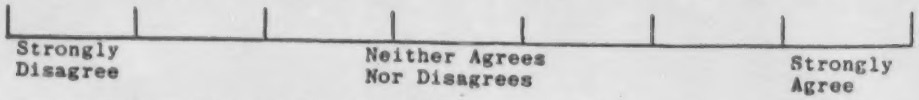
9. I don't think our travel costs have been cut by using this system.



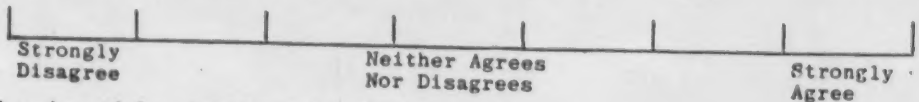
10. This teleconferencing system is a good idea.



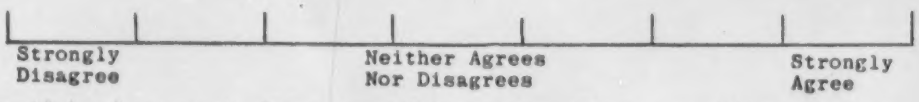
11. A lot of our phone calls and memos can be replaced by teleconference.



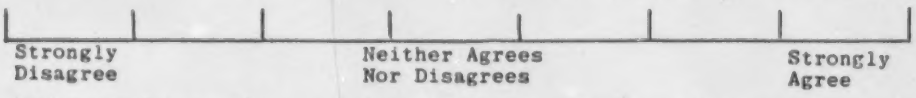
12. This system hasn't helped provide us with any new information.



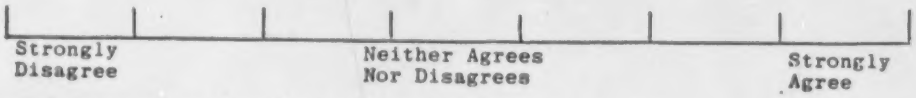
13. Morale in this agency is low.



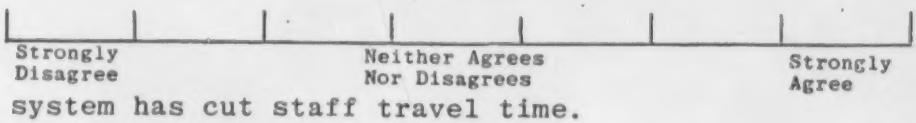
14. Using this has cut down on the paper flow in this agency.



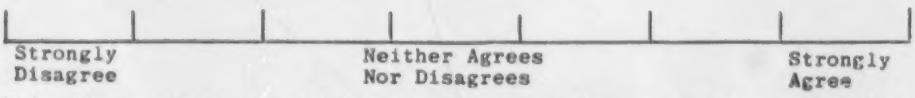
15. This teleconferencing system didn't give us access to any new people and resources we didn't already have.



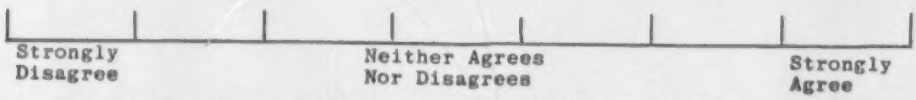
16. We aren't very cohesive as an agency.



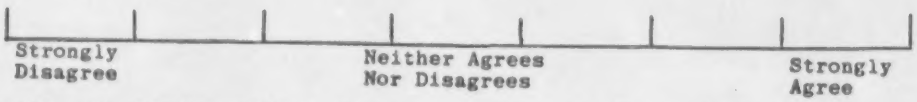
17. This system has cut staff travel time.



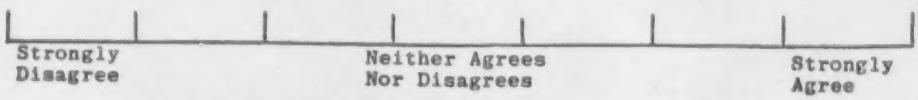
18. I think that many of our current meetings can be done by teleconference.



19. With gas prices the way they are, this system has been valuable to the agency.



20. Overall, I don't think this system has been helpful.



Job Classification (check one)

1. Administrator/Supervisor ☐
2. Direct Service Worker ☐
3. Secretary ☐

AGE

1. 20 - 30 ☐
2. 31 - 40 ☐
3. 41 - 50 ☐
4. 51 - 60 ☐
5. 61 - 70 ☐

E8

NORTHERN NETWORK TELECONFERENCE

STATISTICS

Date Of Teleconference: _____ Time: _____

Title of Teleconference: _____

Location of Leader: _____

Leader of teleconference: _____

	Sites Included	Number of Participants
___	Augusta CO	____
___	Augusta	____
___	Bangor	____
___	Biddeford	____
___	Caribou	____
___	Ellsworth	____
___	Farmington	____
___	Lewiston	____
___	Machias	____
___	Portland (HSDI)	____
___	Portland (VR)	____
___	Rockland	____
___	Sanford	____
___	State House	____
___	Berlin	____
___	Concord CO	____
___	Concord	____
___	Manchester	____
___	Portland (HSDI)	____
___	Portsmouth	____
___	Keene	____

APPENDIX F

PROJECT SAMPLES

F1

SAMPLE BROCHURE

What are we

Northern Network is an audio conferencing network whose purpose is to help organizations that work with people to communicate electronically... overcoming barriers of time, space and money.

Using high quality leased lines from the New England Telephone Company, we reach multiple sites in Maine and New Hampshire. Any combinations of these sites may be used in a conference and privacy is assured for the user. Participants can both hear and respond through specially designed telephone like sets. Voice quality is excellent.

audio tel·e·con'fer·en·cing

1. group voice communication relying on voice exchanges among more than two participants, using an electronic medium. **2. An exciting way for organizations to communicate more and still save money.**

THE UNIVERSITY OF SOUTHERN MAINE

F1

SAMPLE BROCHURE

Primer on audio teleconferencing

What kinds of meetings are most effective over this system?

Meetings which involve information exchange, problem solving, and generating ideas are ideal for teleconferencing. Areas which are better left to face to face meetings are sensitive bar evening sessions and getting acquainted. Examples of teleconferences presently being held over Northern Network include:

- Regional Supervisors meetings
- Total agency staff meetings
- Caseload consultations -- physicians, teachers, etc
- Planning sessions for face to face meetings
- Follow up discussions from face to face meetings
- Training lectures -- classes, using instructors from anywhere in the country
- Announcements of new policies and procedures, the electronic memo

What is necessary to run a meeting using the Network?

Before the meeting:

Schedule time, date and sites with Northern Network staff and participants in the session.

Prepare an outline of the meeting content (an agenda) plus any other materials (slides, pictures or printed texts) which will be referred to during your meeting. mail prior to the meeting.

Make a list of all participants and their locations. Without visual presence a list of participants will remind everyone who is located where.

During the meeting:

Introduce yourself.

Begin with an informal roll call of all participants and check to see if there are others on the line.

Try to keep monologues to a minimum -- the more interactive the meeting, the more interesting it is to participants.

Involve all participants. Encourage participation by calling on persons by name directly.

Upon conclusion, summarize the meeting, ask for feedback, and arrange for future teleconferences if desired.

How to participate in a teleconference?

Teleconferences begin promptly, so plan to arrive at the site 10 minutes before to get comfortable.

Speak within 4 -- 8 inches of the microphone and face it directly.

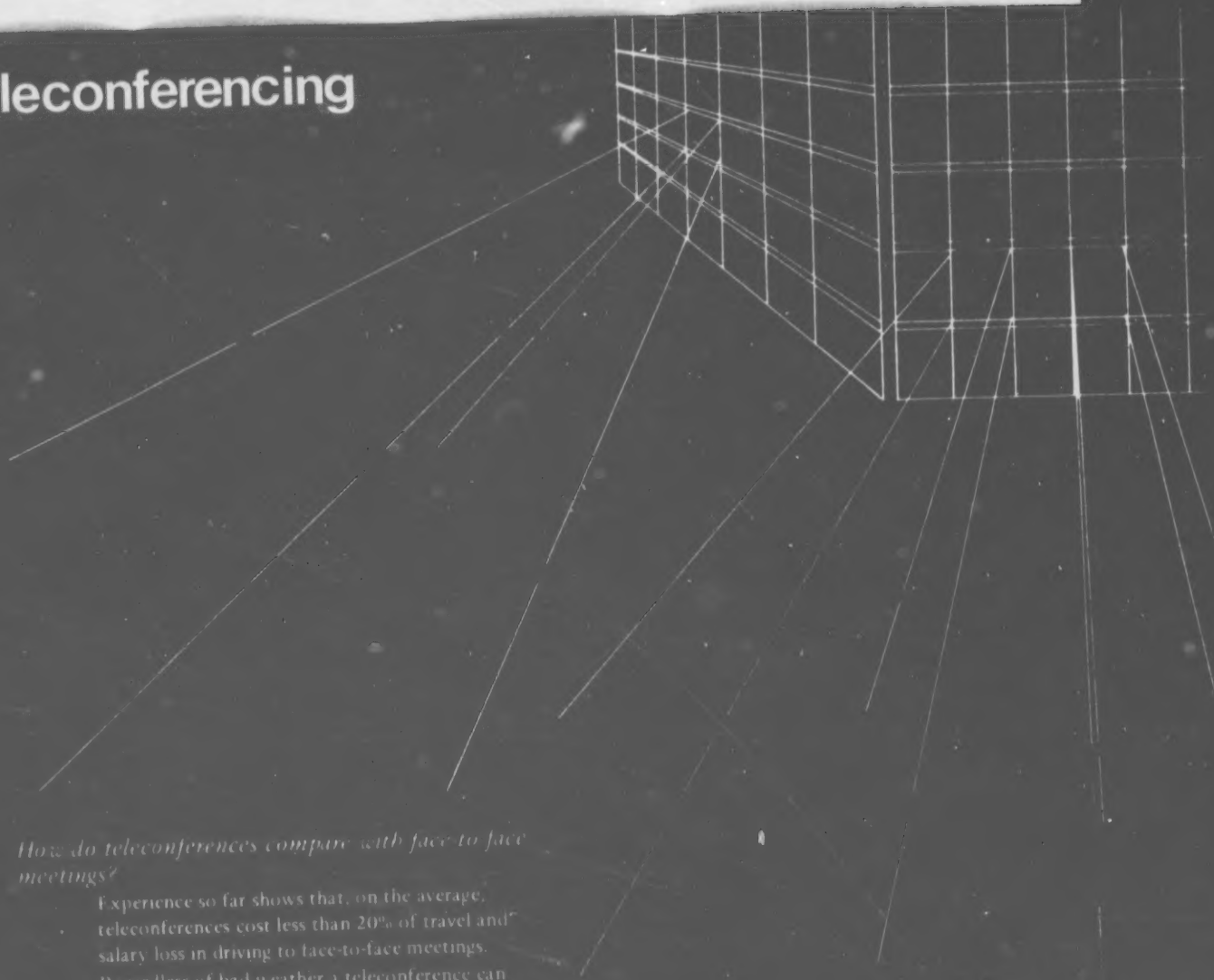
Speak naturally. Do not shout or whisper. Vary the pitch and volume of your voice.

Follow your meeting outline or agenda.

Identify yourself each time you speak, or until you are certain that others recognize your voice.

Try to mentally picture, listen to and talk with individuals -- remember this is a meeting, not a radio show.

If there is "feedback" (a high pitched whine) over the Network, move the microphone away from the speaker box.



How do teleconferences compare with face to face meetings?

Experience so far shows that, on the average, teleconferences cost less than 20% of travel and salary loss in driving to face-to-face meetings.

Regardless of bad weather a teleconference can be held.

More people from more locations can participate in a teleconference, opening new channels for communication.

Being on "home ground" in one's own office lends self-confidence -- and enables both quick consultation with associates and availability of memos and equipment.

What assistance does the Northern Network provide?

We'll sit down and talk with you about the Network, including the clear cost savings of teleconferencing over face-to-face meetings.

We'll discuss scheduling, available times, and how you could reserve the entire Network or a partial Network.

We'll assist you in planning and presenting a teleconference in the most effective manner.

SAMPLE BROCHURE

Who are we

Initially established through a grant from the Office of Telecommunications Policy in Washington, the Network was conceived and developed by the Human Services Development Institute, which is part of the University of Southern Maine's Center for Research and Advanced Study.

Contact us

Bob Threlkeld
Project Director

Pam Pease
Operations Coordinator

Lin MacNair
Research Aide

180

Northern Network

AGENDA

Date: May 8, 1981
Start: 10:30 a.m.
End: 12:00 p.m.

TITLE: SPINAL CORD INJURY

PARTICIPANTS: ME & NH State Rehabilitation Staff

LEADER: Paul J. Corcoran, M.D.

AGENDA ITEM	PERSON	APPROX. TIME	NOTES
I. ANATOMY REVIEW	Corcoran (Handout)	15 min.	
II. OVERVIEW RE: SPINAL CORD INJURY A. Causes B. Proper Care at the Scene of the Accident C. Proper Care in the Emergency Room	(Handout)	20 min.	
III. REHABILITATION PROCESS A. Physical Complications 1. Bowel Dysfunction 2. Pain 3. Sexual Dysfunction B. Role of Nursing C. Psyco-Social Intervention	(Handout)	20 min.	
IV. ADAPTIVE EQUIPMENT	(Handout)	10 min.	
V. DISCUSSION REGARDING OCCUPATIONS	(Handout)	15 min.	
VI. WRAP-UP	Corcoran	10 min.	

F2
SAMPLE AGENDA

Northern Network

MARCH, 1981

TELECONFERENCE SCHEDULE

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
/ N.H. Secretaries 9:00-10:00	3/ N.H. Supervisors 9:00-10:00	4/ Rehab Casework Supervisors Meeting 9:00-10:00 ME. N.H. Supervisors 9:00-10:00 ME&NH System test 10:30-11:30	5/ Similar Benefit Training - ME 9:00-10:00 N.H. Supervisors 9:00-10:00 Special Devices ME/NH 2:00-4:00	6/NH Supervisors 9:00-10:00 ME/NH Special Devices 10:00-11:00 NE Supervisors-NH 11:00-12:00 SW Supervisors-NH 1:00-2:00
/ Deaf Caseworkers N.H. 9:30-10:30	10/	11/	12/	13/NH Supervisors 9:00-10:00 NE Supervisors-NH 11:00-12:00 SW Supervisors-NH 1:00-2:00
6/ C. Owen Pollard 9:00-10:00	17/ Similar Benefits 9:00-10:00	18/ Rehab. Regional Directors- ME. 9:00-10:00	19/ Similar Benefits 9:00-10:00 ME	20/ NH Supervisors 9:00-10:00 NH Blind Services 10:00-11:00 NE Supervisors-NH 11:00-12:00 SW Supervisors-NH 1:00-2:00
3/ Public Health Nursing - ME 10:00-12:00	24/ Similar Benefits 9:00-10:00 ME.	25/ Rehab. Regional Directors - ME. 9:00-10:00 Eye Care Staff-ME 10:30-11:30	26/ Similar Benefits 9:00-10:00 ME NH Training 1:00-2:00	27/ NH Supervisors 9:00-10:00 NE Supervisors-NH 11:00-12:00 SW Supervisors-NH 1:00-2:00
0/ Rehab. Secretaries 9:00-10:00 ME	31/ Similar Benefits 9:00-10:00 ME			

F3 (SAMPLE CALENDAR)

APPENDIX G

NETWORK OPERATOR'S MANUAL

By:

Linda J. MacNair

NORTHERN NETWORK OPERATIONAL INSTRUCTIONS

INTRODUCTION

Northern Network is a private telecommunications system which connects human service agencies in Maine and New Hampshire. Currently, we also have sites in the Augusta State House and at the University of Maine at Farmington. Our lines are leased and maintained by New England Telephone Company. Each site on the system is joined together much like a large intercom system. Equipment at each site consists of a jack, a telephone, a toggle switch, a loudspeaker (Darome Convener), and one or more microphones.

Northern Network has two separate circuits, Maine and New Hampshire. These two circuits can be operated separately and simultaneously, or they can be joined together into one larger circuit connecting both states. Each circuit also has the ability to either initiate or recieve one telephone call which can be connected into the Network.

Each site within the Network has been assigned a two digit individual access code (telephone number). This individual code allows the Network operator to dial a single site or any configuration of sites within that circuit. Individual codes are dialed consecutively for

multiple site teleconferences and no pause is necessary between each code. For example, if a teleconference is to include six of the thirteen sites in Maine, the operator can dial twelve consecutive numbers to connect the six sites very rapidly.

Each circuit has also been assigned a broadcast code. This is a two digit access code which will ring all the sites on that circuit simultaneously without having to dial each site individually. The broadcast code, however, should only be used if all sites are to be included in the particular teleconference being connected.

Individual codes should always be used when only selected sites are asked to be included in a teleconference. This insures those using the Network that no site they have not selected to be included can access their conversation. This is a unique function of Northern Network and is especially important considering the confidential nature of human services.

Each site within the Network has been assigned a "contact person." This is an agency staff person who has the monumental task of maintaining the teleconferencing equipment, scheduling meeting rooms of appropriate size for meetings, disseminating hand-out materials (agendas, etc.), and handling problems that arise during a teleconference. This person is a very valuable resource for the Network operator. Don't hesitate to call this person if you encounter a problem during a teleconference.

TOOLS OF THE TRADE

There are several tools which have been developed to aid the operator in making a teleconference happen. Some of those described also serve a dual purpose of data collection for future evaluation purposes. Each is described in detail below:

1. Northern Network User Guide - This manual was written by project staff for agencies using the teleconferencing system and describes in detail the procedures users are asked to follow in teleconferencing. It would be very helpful for the operator to gain this background.
2. Northern Network Schedule Book - This book is kept on the equipment table and is simply a schedule of events on the Network. This is updated monthly through schedules submitted by each agency's central office contact person. This will tell you the date, time, title and circuit for each teleconference scheduled.
3. Northern Network Site Chart - This chart includes a listing of all sites, their access codes, contact persons, telephone numbers, addresses, broadcast codes, call-in telephone numbers for each circuit, and who to contact at the Telephone Company should a problem with phone lines occur. (See Chart I)

4. Northern Network Statistics Sheet - The statistics sheet is a working paper designed to tell the Network operator everything that s/he needs to know about each individual teleconference scheduled. A separate sheet is maintained for each teleconference and each one is different, just as each teleconference is different. The statistics sheets are color coded, i.e., yellow indicates a Maine circuit teleconference, green indicates a New Hampshire circuit teleconference, and brown indicates either a joint teleconference (both states participating) or an outside group using Network sites to hold a teleconference. The statistics sheet will tell you the date, time, circuit, sites, leader, whether or not to expect a call-in, if so, who and at what number, and whether or not the conference is billable. These statistics sheets are kept in order by date and time on a clipboard on the equipment table. New sheets are added as new teleconferences are scheduled. This is a major source for data collection and evaluation. (See Chart II)
5. Equipment Chart - This chart will acquaint you with the location and function of each piece of Network equipment. (See Chart III)

TYPES OF TELECONFERENCES

There are several types of teleconferences currently being held over Northern Network. Others may be added in the future, but the general procedures will remain the same. Charts and instructions will be updated to include new sites and/or procedures. Current types of teleconferences are:

1. All sites (either Maine or New Hampshire)
2. Selected sites (either Maine or New Hampshire)
3. All or selected sites with a call-in (either Maine or New Hampshire)
4. Joint teleconferences (both Maine and New Hampshire)
5. Joint teleconferences with a call-in
6. Simultaneous teleconferences (both Maine and New Hampshire conferencing separately and simultaneously)
7. Outside groups using Northern Network sites

The procedures for all of these types of teleconferences are basically the same, however, each condition involves additional procedures. Each set of procedures will be detailed in the next section.

PROCEDURES

1. All Sites (Either Maine or New Hampshire)

   a. Check the statistics sheet for the teleconference to verify that all sites are to be included.

   b. If a New Hampshire teleconference, use the telephone labled "A" on Chart III; if a Maine teleconference, use the telephone labeled "B" on Chart III. (NOTE: these are both five button phones - be sure that the first button to the right of the red (hold) button is depressed and lites when the receiver is lifted.) There is never a "dial tone" on either of these phones.

   c. For a New Hampshire teleconference with all sites included, dial 20 (New Hampshire broadcast code) on phone "A". Be sure that the toggle switch #2 is toward the wall (off position) when dialing.
   For a Maine teleconference with all sites included, dial 30 (Maine broadcast code) on phone "B." Be sure that toggle switch #1 is toward the wall (off position) when dialing.

   d. For a New Hampshire teleconference, after dialing, flip toggle switch #2 forward (on position). This will activate the loudspeaker and microphones.
   For a Maine teleconference, after dialing, flip toggle switch #1 forward (on position). This will activate the loudspeaker and microphones.

e. Place the telephone receiver just ahead of the cradle. This keeps the receiver out of your way and reduces the chance of feedback on the line. NEVER HANG UP THE TELEPHONE DURING A TELECONFERENCE! If this should happen, all sites will be disconnected and you must go back to step "a" to reconnect the sites.

f. Your Darome equipment is now activated and you will hear through the Convener (loudspeaker) and you must use the microphone(s) to speak. These are push-to-talk microphones, therefore, to be heard you must depress the black bar at the front base of the microphone. It is not necessary to speak any louder than normal and you should stay about 8" from the microphone when speaking. Release the microphone bar to listen.

g. You will begin to hear a series of clicks and "Good mornings," as sites answer the broadcast code. You should acknowledge each with a "hello or good morning/afternoon, etc." (Don't forget to press the microphone bar to talk!)

h. Within a minute or so, the clicks, etc. will stop. You should then begin a roll call of all sites. Begin with the first site listed for the circuit and ask, for example, "Augusta Central Office, how many participants do you have today?" Write

their response (number of participants) in the space provided on the statistics sheet. (If no response, go on to the next site, i.e., Augusta Regional Office, how many participants do you have for this meeting?) Continue through the list and at the end ask again for sites that did not respond. If there is still no response from any site, see the "Associated Problems Section" for further instructions.

i. Once you are finished with your poll, inform the meeting leader (listed on the statistics sheet) that s/he may begin the teleconference.

j. Now that the teleconference is in progress, you simply monitor for technical problems on the circuit. For a detail of common problems, be sure to read the "Associated Problems Section" carefully prior to the teleconference. Usually the audio quality is quite good and you will simply be required to listen.

k. If there is another meeting scheduled immediately following the one in progress, you should inform the leader about five minutes prior to the scheduled end that s/he should wrap up. Most teleconferences are of one hour duration.

l. When the meeting is finished, you must disconnect the sites and clear the circuit. This is done

by flipping the toggle switch toward the wall and hanging up the telephone receiver. Wait about five seconds and pick up the phone again and dial "1." You should hear a high pitched tone that lasts about three seconds. This tells you that the circuit is now clear. (If you don't get the tone, it means that someone has not hung up their phone or turned off their equipment. Ask over the phone, "Please be sure to turn off your Conveners.") Wait a few seconds and dial "1" again. You should now get the tone.

m. Teleconference complete, hang up the phone and get a much needed cup of fresh coffee.

2. Selected Sites (Either Maine or New Hampshire)

a. Check the statistics sheet to verify which sites have been requested.

b. If a New Hampshire teleconference, use telephone "A." If a Maine teleconference, use phone "B."

c. Dial the appropriate individual codes (listed on the statistics sheet next to each site) for each site to be included. These may be dialed consecutively with no pauses necessary.

d. Flip on the appropriate toggle switch (away from the wall). Maine - #1, New Hampshire - #2.

e. Place the telephone receiver in front of the cradle. DO NOT HANG UP THE TELEPHONE.

f. The Darome equipment is now activated. Don't forget to press the microphone bar to talk.

g. You will hear a series of clicks and "Good mornings" as sites respond to their individual codes. Acknowledge each.

h. When the clicks, etc. stop, take a poll of each site you dialed. Enter the number of participants at each site on the statistics sheet. (If any site does not respond, see the "Associated Problems Section" for further instructions.)

i. Inform the leader that s/he may begin the teleconference.

j. Monitor for technical problems.

k. Five minutes prior to the scheduled end, remind the leader to wrap up.

l. Disconnect the sites and clear the circuit, i.e., flip the appropriate toggle switch toward the wall, hang up the phone, wait five seconds and using the same phone, dial "1" to clear the circuit.

3. <u>All or Selected Sites With A Call-In (Either Circuit)</u>

a. Check the statistics sheet to verify if a broadcast code (all sites included) or individual codes (selected sites indluded) are required.

b. Generally, a call-in will be an incoming call. If on the New Hampshire circuit, it will come in

on telephone "C" (see Chart III), if the Maine circuit, it will come in on telephone "D" (see Chart III). Call-in participants are instructed to call the appropriate telephone number about five minutes prior to the scheduled meeting time. This allows a few minutes to be sure the caller has a clear line with good volume. If not, ask the caller to redial. Once you have established a good connection, ask him/her to hold while you connect the other sites.

c. Connect sites as previously directed.

d. Take a poll of participants and enter data on the statistics sheet.

e. Inform the teleconference leader that you will now connect Mr/s. Jones.

f. Pick up the call-in phone and inform Mr/s. Jones that you will now connect him/her into the circuit.

g. Flip toggle switch #4 forward for a Maine call-in. Flip toggle switch #5 forward for a New Hampshire call-in (forward to on position).

h. Hang up the call-in phone and inform the meeting leader that Mr/s. Jones is on line and they may now begin the meeting.

i. Monitor as directed previously. (IMPORTANT NOTE: if at any time during the teleconference you hear

a dial tone over the loudspeaker, it indicates that the call-in connection has been broken. Immediately flip off the call-in toggle switch. This will clear the dial tone from the circuit. Then inform the meeting leader what has happened and advise him/her that you will reestablish the connection. Dial the number listed on the statistics sheet and go back to step "e.")

j. At the end of the meeting, flip all switches to the off position and hang up the phone. Wait five seconds and clear the circuit by dialing "1."

NOTE: The call-in phones for both circuits are not connected to "infoswitch" lines. You must dial "9" to make any outside call.

4. Joint Teleconferences (Both Circuits Joined Together)

a. Check the statistics sheet to determine if a broadcast code or individual codes are required.

b. Dial the appropriate code(s) for the circuit with the fewest participating sites first.

c. Flip the appropriate circuit toggle switch on.

d. Take a poll of sites and enter data on the statistics sheet.

e. Inform the meeting leader that you will now connect the other circuit.

f. Dial the appropriate code(s) for the circuit.

g. Flip on the appropriate toggle switch.

h. Take a poll of sites and enter data.

i. Join the circuits together by flipping toggle switch #3 (GAP KEY) forward.

j. Inform the meeting leader that all sites are on line and s/he may begin the meeting.

k. Monitor as usual.

l. Disconnect and clear the circuit by dialing "1" on both circuit phones.

5. Joint Teleconferences With A Call-In

a. Establish the call-in connection and ask the caller to hold while you connect other sites.

b. Connect the circuits as described in #4.

c. Connect the call-in and inform the meeting leader that Mr/s. Jones is on line and s/he may begin.

d. Monitor.

e. Disconnect and clear the circuits.

6. Simultaneous Teleconferences

Occasionally, meetings are scheduled for both Maine and new Hampshire at the same time. The only problem this creates is that it is quite hectic for the operator for the first few minutes. You should first decide which circuit can be connected the quickest. This would be the circuit with the fewest participating sites (compare statistics sheets). Follow the procedures outlined for that type of teleconference. Once the connections have been made and the meeting begun, flip off the toggle switch used (as long as the phone is not hung up, there will be no disruption; this simply

clears the loudspeaker and microphones for use in connecting the other teleconference). Then dial the appropriate code(s) for the other teleconference as directed per appropriate instructions.

Monitoring simultaneous teleconferences is done by alternating between circuits. To monitor the Maine circuit, flip toggle switch #1 forward, for New Hampshire flip toggle switch #2. You can also keep one circuit on the loudspeaker and occasionally listen to the other via the telephone handset.

You should inform the meeting leaders of both teleconferences that you will not be able to monitor the entire meeting and that if they encounter a problem they should call 780-4430.

It is possible with this type of teleconference to have both call-in phones in use at the same time also. Each will be connected into their corresponding circuit as described.

Those using the circuits in Vocational Rehabilitation are seasoned users and are able to handle most of the technical problems that commonly arise.

7. Outside Groups Using Northern Network Sites

New users of the system need a little more guidance during their first few teleconferences. If you should find a VR group on one circuit and a new user group on the other, be sure to keep the new user group on

the loudspeaker and listen occasionally to the VR group via the telephone handset. New user groups find it reassuring to know that if something goes wrong with the lines or a technical problem comes up with equipment or its usage, that help is just seconds away.

Another consideration is that new user groups are often trying out the system to see how it works for them and may potentially become paying customers. It is important, therefore, to insure that the technical aspects of their trial teleconference be positive rather than negative.

ASSOCIATED PROBLEMS

1. Site(s) Not Responding to Either Broadcast Code Or Individual Codes!

Occasionally, one or more sites will not respond to their code. There are several reasons why this happens. The most common reason being the electronic signal did not go through to that site. If, when you are taking your poll of sites, one or more do not respond, do the following:

a. Inform the meeting leader that you have not been successful in getting the site(s) on line. Ask if they would like to wait until the site(s) are connected, or if they would like to proceed now. If they wish to go ahead, let them proceed and tell them you will connect the site(s) as soon as possible. If not, tell them you will try now.

b. Flip off the circuit toggle switch (#1 or #2) and dial the individual code for the site(s). Wait a few seconds, if still no response, flip the circuit toggle switch back on and call the contact person at the site(s) not reached. Inform her that you have a teleconference in progress and her site has not come on. Ask her to turn on the equipment and see if she is able to access the teleconference. Usually this is all that is necessary. Inform the meeting leader via microphone (wait for a pause in

the conversation if possible) that the missing site(s) are on line.

If the site is still unable to access the conference, make sure that the equipment is plugged into the jack and electrical outlet. This will sometimes clear the problem.

If the site is still unable to access the conference, call New England Telephone Co. at 775-9902 and ask for Bob Coombs. Explain the problem and identify the circuit being used. At this point Mr. Coombs will take over trying to correct the problem and you should inform the meeting leader that contact has not been established, however, NET is aware of and is working on the problem. In the meantime, they should continue (or begin) without the site.

2. Feedback Over the Circuit!

Feedback is a loud whistling noise heard over the loudspeaker. This is very annoying to teleconference participants. You should try to identify the source first. It can be generated by any site on line. If it's not too loud, leave it alone! If it becomes bothersome to participants, the next time it occurs, ask which site is speaking. Most often, feedback is caused by using the microphone too close to the loudspeaker of aiming the microphone toward it. Ask the

site to please move their microphone(s) away from their Convener. This generally clears the feedback.

3. Crosstalk Over Network Lines!

You have no control of this situation. You should call Bob Coombs and report the problem to him. Be sure to identify which circuit is experiencing the crosstalk. NET can usually clear this problem within a few minutes.

4. Scratching Noise on Network Lines!

Occasionally, most often in wet weather, you will hear a loud scratching noise over the lines. Sometimes it becomes so loud that all conversation is lost. This is another situation which can be corrected by NET only. Inform the meeting leader that they are experiencing microwave interruptions and you have notified NET.

Occasionally, the scratching noise is generated by one of the sites on line. This can be corrected by asking that site to check to see that their microphone cords are securely in place.

5. Voices Breaking Up or Choppy Transmission!

This is most often caused by a loose microphone cord. Ask the site having the problem to check their microphone cords to see that they are securely in place. If this doesn't clear the problem, ask if they are pressing the microphone bar evenly when speaking. Speaking too close to the mircophone can also cause this problem.

Choppy transmission is usually a problem with our Darome equipment and NET should not be contacted. If available, ask the site to switch to a different microphone. If another is not available, they will have to endure the problem this time.

After the teleconference is over, call the contact person at that site and ask her to clean (using emery cloth or a penicl eraser) the microphone cord connectors. If this doesn't work ask them to send the microphone to Darome for repair.

6. A Site Reports They Cannot Hear Over the Loudspeaker!

When this happens, be sure the equipment is plugged in. Ask if the "red light" is on on the front of their Convener. If not, ask them to plug it in. Also ask them to see that the telephone is plugged into the wall jack. If these check points fail to produce sound, call NET and report the problem.

7. A Site Reports They Can Hear But Cannot Be Heard!

Make sure their microphones are plugged into the Convener. If this does not clear the problem, call NET and report the problem.

8. All You Can Hear Is A High-Pitched Tone on the Circuit!

The high pitched tone is a "privacy tone" and indicates that someone is on the circuit. Your circuit phones are equipped with an override button (last button to the right). By depressing this button, you can

override the privacy tone and break into the conversation. The control center at HSDI is the only site with this feature. If you are about to begin a teleconference and must override to get the line, ask the party(ies) on line to please hang up so you can connect the teleconference.

If a problem occurs that is not listed here, or if you are unable to correct a problem through suggested methods, you can call Mr. Coombs at NET and describe the problem to him. He is very familiar with the circuitry and with our Darome equipment and can sometimes suggest additional means of clearing a problem.

Bob Threlkeld, Pam Pease and Lin MacNair are all familiar with the Network functions and may be able to help.

Northern Network

G21 CHART I

The following chart identifies State Broadcast Codes, Individual Site Coeds, Contact Persons, addresses, telephone numbers and call in numbers for all locations currently connected into the Northern Network.

SITE LOCATION	INDIVIDUAL CODE	CONTACT PERSON	TELEPHONE NUMBER	STREET ADDRESSES
Augusta-CO	37	Elsie Graham	289-2266	32 Winthrop St.
Augusta-RO	38	Geraldine Dodd	289-2586	Western Ave.
Augusta-SH	48	Judy Thompson	289-3381	State House
Bangor-RO	36	Lois Senter	947-0511	396 Griffin Rd.
Biddeford-RO	44	Andrea Duquette	282-6191	121 Main St.
Caribou-RO	33	Debby Kilpatrick	498-8151	41 Washburn St.
Ellsworth-RO	35	Joan Graham	667-5393	Linnehan Building
Farmington-UMF	46	Betsy Butler	778-3501	Main St.
Lewiston-RO	42	Jackie Dumont	783-9151	200 Main St.
Machias-RO	34	Alta Bowley	255-8641	100 Court St.
Portland-USM	32	Lin MacNair	780-4034	246 Deering Ave. (HSDI)
Portland-RO	43	Sylvia Jones	774-4581	509 Forest Ave.
Rockland-RO	39	Eunice Schleicher	594-2521	1 Park Dr.
Sanford-RO	45	Wanda Andrews	324-9472	Lower Midtown Mall
MAINE BROADCAST CODE: 30			MAINE CALL-IN TELEPHONE #(207)780-4407	
Berlin-RO	23	Clair Stiles	752-2271	132 Pleasant St.
Concord-CO	24	Josephine Hayslip	271-3118	105 Loudon Rd., Bldg. #3
Concord-RO	25	Simone Cournoyer	271-2327	105 Loudon Rd., Bldg. #1
Keene-RO	26	Debbie Liberty	357-0266	25 Roxbury St.
Manchester-RO	27	Mae Clapp	669-8733	136 Lincoln St.
Portland-USM	22	Lin MacNair	780-4034	246 Deering Ave. (HSDI)
Portsmouth-RO	28	Linda DiBernardo	436-8884	147 Congress St.
NEW HAMPSHIRE BROADCAST CODE: 20			NEW HAMPSHIRE CALL-IN TELEPHONE #(207)780-4408	

Technical problems with either circuit are reported to: Bob Coombs at 775-9902

CHART II

G22

NORTHERN NETWORK TELECONFERENCE

STATISTICS

Date Of Teleconference: _____ Time: _____

Title of Teleconference: _____

Location of Leader: _____

Leader of teleconference: _____

		Sites Included	Number of Participants
37	___	Augusta CO	____
38	___	Augusta	____
36	___	Bangor	____
44	___	Biddeford	____
33	___	Caribou	____
35	___	Ellsworth	____
46	___	Farmington	____
42	___	Lewiston	____
34	___	Machias	____
32	___	Portland (HSDI)	____
43	___	Portland (VR)	____
39	___	Rockland	____
45	___	Sanford	____
48	___	State House	____
23	___	Berlin	____
24	___	Concord CO	____
25	___	Concord	____
27	___	Manchester	____
22	___	Portland (HSDI)	____
28	___	Portsmouth	____
26	___	Keene	____

Call-In

Yes ☐ No ☐

_____
Name

_____
Location

_____
Telephone Number

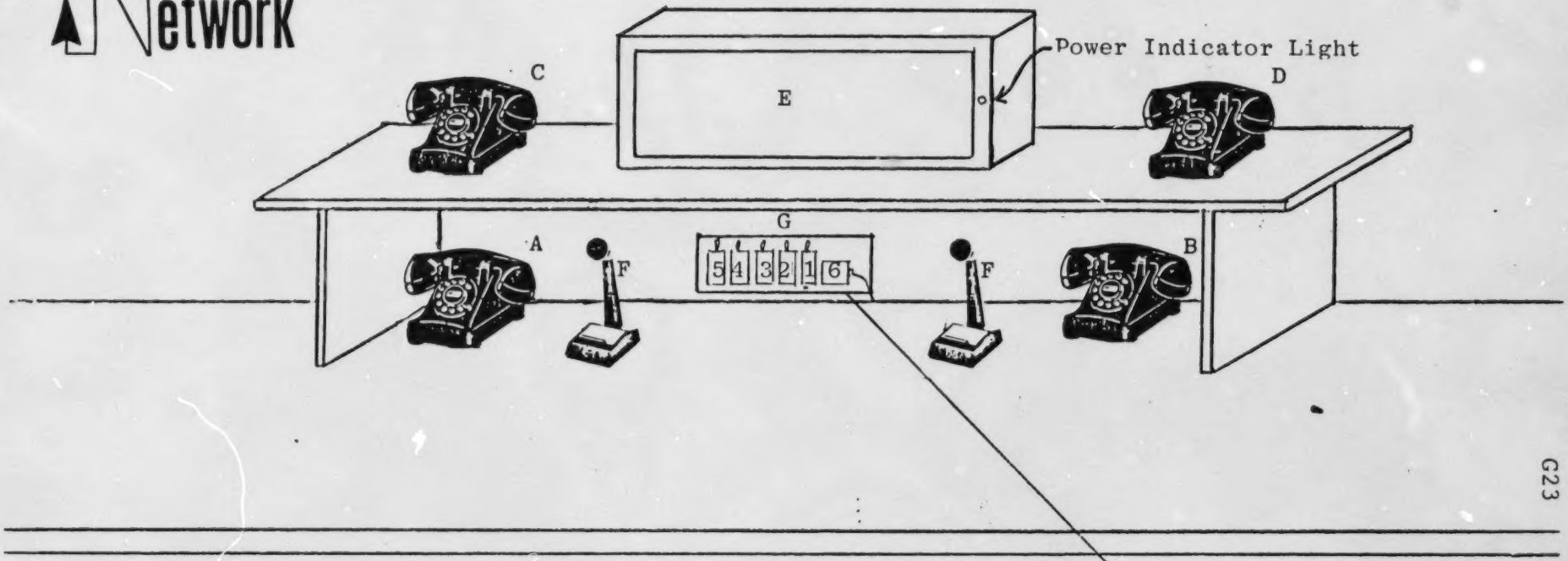
Bill

Yes ☐ No ☐

Tape

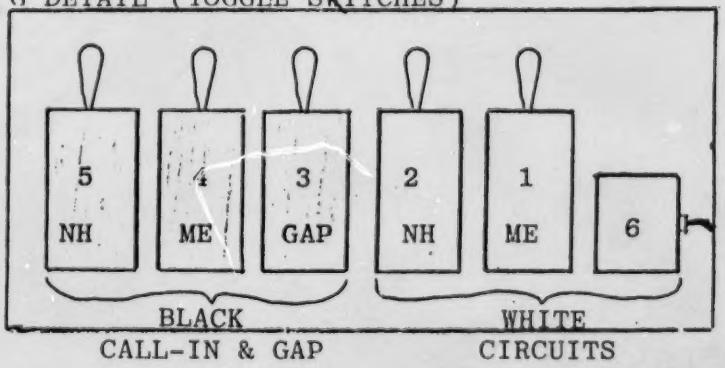
Yes ☐ No ☐

Northern Network



G23

LEGEND

A = New Hampshire Circuit Phone
B = Maine Circuit Phone
C = New Hampshire Call-In Phone
D = Maine Call-In Phone
E = Darome Convener (Loudspeaker)
F = Darome Microphones
G = Control Switches
    1 = Maine Circuit
    2 = New Hampshire Circuit
    3 = Gap Key (Joins Circuits)
    4 = Maine Call-In
    5 = New Hampshire Call-In
    6 = Jack

G DETAIL (TOGGLE SWITCHES)